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STATEMENT OF WORK

BTEX-IMPACTED SOIL REMEDIATION BID DOCUMENTS

AREA 29 - FIRE TRAINING AREA

Prepared for

FAA William J. Hughes Technical Center

Atlantic City International Airport, New Jersey

Prepared by

TRC Environmental Corporation

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TRC Project No. 216356.000130.000100

FEBRUARY 2015

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1.0 INTRODUCTION

This Statement of Work (SOW) describes the requirements for a Remediation Contractor (RC) to provide certain remedial actions at Area of Concern (Area) 29, former Fire Training Area, at the Federal Aviation Administration (FAA) William J. Hughes Technical Center (Technical Center) at the Atlantic City International Airport, New Jersey. The remedial actions consist of excavation or implementation of In-Situ Thermal Remediation (ISTR) to address benzene, toluene, ethylbenzene, and xylene (BTEX) impacted soil. If excavation is utilized, contaminated soil exceeding applicable cleanup criteria shall be disposed offsite. Additional project elements include decommissioning and/or demolition/abandonment of existing infrastructure and replacement of extraction and monitoring wells. This SOW includes a description of the required work and other relevant materials or information to assist the RC in preparing a bid proposal. Upon award of the project, the RC shall be fully responsible for ensuring that the work is completed in accordance with applicable permits, regulations, and Bid Documents (including the Project Plans and Project Specifications).

2.0 BACKGROUND

2.1 Site Description

Area 29 is located northeast of the Atlantic City International Airport runways and southwest of White Horse Pike. The site was constructed in the early 1970s for the training of airport firefighting personnel. The facility consisted of a circular burn area approximately 150 feet in diameter, a small concrete burnpad, two aboveground fuel tanks on a small hill, and two underground tanks for the collection of runoff from the burn pads. Full-scale aircraft test burns were conducted on the large circular burn area, while smaller fuel fires were extinguished on the concrete pad. An underground drain system was used to collect runoff from the circular burn area and divert it to a 10,000-gallon underground circular storage tank. Runoff from the concrete pad was collected in a 5,000-gallon underground storage tank (UST). Both of the USTs were emptied, removed, and disposed of off-site in an environmentally safe manner in December 1988.

Site geology and hydrogeology play a major role in understanding contaminant fate and migration at Area 29. Soil contamination at Area 29 is limited to a perched groundwater area. Generally, the upper 10 to 22 feet of soil within the perched water zone of Area 29 is dominated by fine to medium sands. In some areas, this upper sand unit contains appreciable mounts of silt. Beneath this perched zone, a clayey-silt layer up to 18 feet thick occurs, which pinches out in all directions beyond the triangular-shaped area defined by the dirt roads that outline the central area of the site. This clayey-silt layer is generally bowl-shaped and thickest in the center of the site.

Infiltration of precipitation and runoff above the local low-permeability clayey-silt layer beneath the site results in a discontinuous shallow zone of saturation and mounded, perched water table that is 3 to 6 feet below ground surface. Natural groundwater flow in this perched zone is radially outward from the center of the site. Monitoring wells completed in the deeper groundwater system below the clayey-silt layer have water levels 14 to 16 feet below ground surface. This system is locally confined, but is an unconfined water table aquifer beyond the clayey-silt layer and perched water. Flow in this unconfined aquifer is generally to the east beneath the site, including the area of the infiltration gallery. Data from pumping tests conducted in the perched and unconfined aquifers suggest the hydraulic communication between the two systems is extremely limited.

2.2 Environmental Conditions and Objectives

The Area 29 ROD was signed on September 20, 1996, documenting a remedy that included the excavation and off-site disposal of soil contaminated by polychlorinated biphenyls (PCBs) and

total petroleum hydrocarbons (TPHs), and the extraction and treatment of VOC-contaminated perched groundwater. Excavation and off-site disposal of 4,041 cubic yards of contaminated material was completed in 2001. The soil remediation activities were conducted based on a soil PCBG cleanup level of 2 parts per million (ppm) and a TPH cleanup level of 10,000 ppm. Demolition, removal and off-site disposal of debris from the circular burn pad and the former concrete pad was also completed. The groundwater treatment system became operational in July 2004. The ROD based cleanup levels BTEX in groundwater are 1 part per billion (ppb), 5 ppb, 5 ppb, and 2 ppb, respectively.

In order to enhance the groundwater remediation of BTEX at Area 29, surfactants were applied at the site as part of a pilot-scale program in 2011 and 2013. Following the pilot-scale testing, total VOC levels in the treatment system influent decreased from an average of approximately 150 ppb to less than 50 ppb. Since 2012, only one monitoring well, 29-MW7S, has exhibited contaminants above ROD-based cleanup goals.

Based on a review of the groundwater monitoring data collected following the pilot-scale testing, it was suspected that residual soil contamination could be contributing to the continued presence of BTEX in groundwater extracted from the site. Following a review of historical data, investigations were conducted in early 2014 to determine if residual soil contamination could be contributing to groundwater impacts as discussed in the associated Remedial Enhancement Investigation (REI) Report (TRC, August 2014). The REI evaluated the possible presence of residual BTEX contamination in soils in two distinct areas of the site: the former underground piping, which transported fuel from the two former aboveground storage tanks to the large burn pad (referred to as the Western Grid area), and the former 10,000-gallon underground storage tank area, which received waste runoff from the large burn pad (referred to as the Eastern Grid area). Therefore, additional Geoprobe® soil and groundwater sampling was conducted in these two targeted areas. The REI results indicated that residual BTEX soil contamination is located to the southwest of the pilot-scale surfactant application areas and is continuing to act as a source of groundwater impacts to the Western Grid area. Soil BTEX contamination in the southern portion of the Eastern Grid and Western Grid areas and continued detections of elevated BTEX levels in groundwater remain within the Eastern and Western Grids, indicating that additional remediation of these areas would be required before the site can be closed out under the Superfund program.

A review of the REI data, however, indicated that two BTEX data gap areas remained:

1) The southern and eastern borders of the Eastern Grid area (east of the former circular burn pad); and

2) The area between the Eastern Grid and Western Grid (located in the center of the former circular burn pad area).

These areas were more fully delineated as part of late 2014 field investigation efforts discussed in an associated Data Gap Investigation and Engineering Evaluation Report (DGI & EE) (TRC, January 2015). Results indicated that significant soil BTEX contamination did not extend into these areas.

The presence of perfluorinated chemicals (PFCs) in groundwater at Area 29 was identified following a 2013 NJDEP report that presented the results of a statewide study of PFCs in 29 public water supplies, including ACMUA's Upper and Lower Atlantic City Reservoirs, and two rounds of subsequent surface water and groundwater sampling conducted at the Technical Center by the FAA in 2014. PFCs are water soluble, persistent and bioaccumulative compounds that are found in consumer products and aqueous film forming foams (AFFF) used in firefighting foams. The presence of PFCs at Area 29 is likely attributable to its former use as a fire training area.

2.3 Remedial Technology Selection

One of the objectives of the DGI & EE mentioned in Section 2.2 was to identify viable and cost-effective remedial technologies for addressing BTEX impacts remaining at Area 29. To achieve this objective, the DGI & EE included an initial assessment of baseline site conditions (including the nature and extent of the fuel oil contamination) by performing a comprehensive review of historical data, and the targeted field investigations. Based on the information obtained in those tasks, the DGI & EE incorporated a technical review and an engineering evaluation of potentially suitable options for remediation of the BTEX-impacted soil at Area 29. TRC recommended one ex-situ remedy – excavation – and one in-situ remedy – ISTR. Furthermore, TRC recommended that designs be developed for both options, in order for FAA to be able to solicit bids for both options and help ensure the most suitable/cost-effective alternative is implemented. As part of the excavation-based remedy, petroleum-impacted soil would be disposed or reused offsite at an approved location/facility. The ISTR based approach would consist of some type of electrical heating of the subsurface. Demolition/decommissioning or certain site features/components at Area 29 is also proposed.

3.0 REQUIREMENTS

3.1 General Requirements

3.1.1 Pollution Liability Insurance

The RC shall submit original proof plus three copies of the Contractor's insurability certificate for Pollution Liability Insurance (PLI). No facsimile copies will be acceptable. This certificate shall reflect that the Contractor has complied with the carrier's audit procedures for PLI. These audit procedures may include: RC's financial and loss information, copy of the record of decision, bid/proposal specifications, etc. The Contractor shall obtain $2,000,000.00 of PLI, $200,000.00 per occurrence, with the Technical Center named as additional insured. The insurance certificate shall be provided 30 days prior to the RC mobilization to the Site. The submittal shall occur as part of the bid submittal package. Failure to provide proof of coverage or proof of $2,000,000.00 PLI is cause for rejection of this bid by the Government.

3.1.2 Permits, Fees, Certifications and Permit Fines

The RC shall obtain and maintain the applicable permits, permit equivalencies, and the required certifications, and pay the appropriate fees, as required for the performance and execution of this SOW.

The RC shall coordinate with the FAA's Resident Engineer (RE) when applying for any applicable/required permits.

The RC shall ensure that all required permits and certifications are transferred or obtained within the required timeframe. Copies of all applicable permits and certifications shall be provided to the RE.

The RC shall pay any fines levied against the FAA as a result of permit violations attributable to RC negligence.

3.1.3 Use of Consultants or Subcontractors

Notwithstanding any provisions of this SOW, the use of consultants or subcontractor services may be subject to prior written approval of the RE.

The RC shall describe, in detail, the services to be performed and shall provide resumes and references of the consultant or subcontractor for approval by the RE prior to the work identified being performed, or as otherwise required in the submittal procedures of the Technical Specifications.

The RC shall be responsible for preparing two way memo lines, and all subcontracts and purchase orders for work performed.

3.1.4 General Conditions

All work for this project shall be completed in accordance with applicable health and safety requirements and environmental protection requirements contained in Specification Sections 01560, 01740, and other applicable sections. Existing property shall be protected from damage during execution of the work and repaired at the Contractor's expense. Air quality monitoring and dust, odor and noise control/mitigation shall be furnished during the project, as specified.

3.2 Specific Project Elements for Excavation Remedial Alternative (If Selected)

3.2.1 Excavation Project Site Preparations

The site shall be prepared as described in the Bid Documents prior to performing excavation of contaminated (BTEX-impacted) soils and materials. These activities shall include: installing sedimentation and erosion controls, placing site trailers, installing temporary utilities, completing pre-excavation surveys, setting temporary sanitary facilities, and installing decontamination facilities. Prior to soil excavation activities a private utility mark-out contractor shall be utilized to locate any utilities in the excavation area.

In order to secure the excavation area, orange safety fencing shall be placed around the perimeter of the excavation area. The orange safety fencing shall be secured where possible during the work day and completely encircle the excavation during nights and weekends when no activities are ongoing. Erosion controls and stormwater management measures shall be installed as indicated on the Project Plans.

Prior to exiting the work site, all trucks and construction equipment shall be decontaminated at a decontamination pad to be constructed as indicated on the Project Plans. Equipment and vehicles shall be decontaminated with a pressure washer or steam cleaner. Water from the decontamination pad shall be collected in a frac tank and periodically transferred to the Area 29 treatment plant for treatment and disposal. In some cases, pre-treatment may be required.

As early as possible prior to beginning excavation, the RC shall initiate dewatering activities as needed to help attain the required levels of drawdown. The RC shall install dewatering structures and equipment, and shall place frac tanks as shown on the Project Plans. Installation

shall include pumps and other necessary components to convey dewatering wastewater to the Area 29 treatment plant.

Soils excavated from Area 29 shall be temporarily stockpiled pending characterization for future loading and offsite transport/disposal. The RC shall construct lined soil stockpile areas as shown, and where shown, on the Project Plans.

3.2.2 Excavation Project Demolition Work

Certain existing remedial system components at Area 29 will need to be demolished/removed prior to soil excavation activities. The RC shall excavate, locate, deactivate, cut and cap existing underground remediation system water piping and electrical conduits. Piping and conduit outside the limits of excavation shall be temporarily abandoned such that they can be reused if needed (whereas piping and conduit within the excavation areas may be removed later during excavation activities.)

The RC shall remove/decommission groundwater extraction and monitoring wells 29-EW1, 29-EW3, 29-MW2S, 29-MW7S, 29-MW9S, 29-MW-14S, 29-OW6S, and 29-OW7S in accordance with applicable regulations, including NJAC 7:9D. Unless specified or approved otherwise, all components associated with the extraction and monitoring wells shall be completely removed and disposed/salvaged. Boreholes shall be properly sealed as described in NJAC 7:9D. The RC shall also salvage sprinkler system components, including sprinkler heads and water sensing station, as specified.

3.2.3 Excavation of Soil and Other Materials

After obtaining required approvals and making necessary arrangements and site preparations, soil and other materials shall be excavated as described in the Bid Documents, including Specification Sections 02225 (non-contaminated materials) and 02226 (contaminated materials). Handling of contaminated materials shall be in accordance with Sections 02990, 02995 and other applicable requirements.

Prior to beginning any excavation activities, uncontaminated topsoil above the excavation area shall be stripped and stockpiled for later use. Non-contaminated soils overlying contaminated material shall then be excavated as needed to obtain access to the contaminated soil. The non-contaminated soils shall be mounded and/or stockpiled immediately adjacent to the excavation area.

It is anticipated that excavation of contaminated soil will be performed in two phases (Western Grid and Eastern Grid areas) and that additional dewatering may be required to supplement the preliminary dewatering described in Section 3.2.1. All excavation and dewatering shall be performed under the supervision of a qualified, competent person, in accordance with OSHA regulations (including requirements for suitable access and egress, and testing of atmospheric hazards) and the Site Safety and Health Plan. Unless specified or approved otherwise, the excavation area shall be protected from cave-in by sloping at a maximum allowable slope of 2H:1V (except for a ramp, as noted below) subject to final determination by the competent person based on actual site conditions. If necessary, the RC shall propose the location of a vehicle ramp (nominally 5H:1V) at the excavation, and periodically enlarge the ramp during the course of the excavation, as needed to facilitate loading of dump trucks. Noise, dust, and fuel oil odors shall be limited during the course of the excavation to a maximum extent practical, and the RC shall provide water spray for reducing dust as needed. Where possible, the RC shall utilize dedicated equipment for excavation and handling of clean soil and dedicated equipment for excavation and handling of BTEX/petroleum-impacted soil.

The soil contamination area maps and profiles Project Plans shall be used to help guide the horizontal and vertical extents of excavation. Soil excavations shall be continuously monitored with a PID at a minimum depth (vertical) interval of one foot. Soils registering PID readings of 50 ppm or greater shall be considered impacted and segregated separately from clean overburden soils at the contaminated soil stockpile area. All impacted soils shall be stockpiled in soil piles with a maximum volume of 250 cubic yards per pile. Soil shall be excavated from each grid cell as shown on the Project Plans until the prescribed depth is reached or until one foot of clean soils (soils registering less than 50 ppm on the PID) is reached. When the prescribed soil excavation depth has been reached and soils at the bottom of the excavation register less than 50 ppm on the PID, the RC shall notify the RE and collect a soil sample from the bottom of the excavation at locations as described in Specification Section 02004 and submit for laboratory analysis for SPLP – BTEX (8260C). After the RE receives the soil sampling analytical data, the RE shall determine if the grid can be backfilled or if additional soil excavation is required.

A disposal characterization sample shall be collected from each stockpile (250 cubic yards) or at a greater frequency if required by the disposal facility(ies). See Specification Section 02990 for characterization sampling requirements. After the disposal characterization data has been received, with the approval of the disposal facility and RE, separate stockpiles that will be disposed

at the same facility may be consolidated (e.g. soil containing PCBs ≥ 1 ppm vs. soils with PCBs < 1 ppm). All soil shall be removed from the site as soon as practical. It is assumed that soils will be continuously removed from the stockpile area for off-site disposal throughout the entire project duration.

Decontamination wash water and dewatering wastewater shall be transferred to frac tank(s) to facilitate silt and sediment removal, and oil-water separation, prior to discharge to the on-site treatment plant. Maximum treatment capacity of the treatment plant is 25 gpm. Fuel oil present as a non-aqueous phase liquid (NAPL) or a sheen shall be removed from the water in the frac tank using a vac truck and/or sorbent pads for disposal in accordance with applicable regulations. Frac tanks may be relocated if necessary between phases, or within a phase, as needed to facilitate dewatering of a given area.

3.2.4 Excavation Project Backfilling, Compaction, and Site Restoration

Following excavation of contaminated (BTEX-impacted) soils and materials, receipt of confirmatory samples indicating that all contaminated soils in a given area have been removed, and receipt of FAA approval, the associated excavation area shall be backfilled and compacted in accordance with Specification Sections 02225 and 02226. Prior to its use, backfill material shall be tested in accordance with the Project Specifications for physical and chemical characteristics. Only those materials meeting the requirements of the Specifications shall be used onsite. During compaction activities, in-place soils shall be tested in accordance with the requirements of Specification Section 02225 or 02226, as applicable.

Upon completion of backfilling and compaction of all the excavations, the surface shall be restored to specified conditions. Temporary features such as the decontamination pad and gravel roadways shall be removed. Except where specified otherwise, all disturbed areas shall be restored with turf in accordance with Specification Section 02935.

3.2.5 Excavation Project Characterization Sampling and Soil and Material Disposal

Soils and materials excavated at the site shall be handled, sampled and disposed of in accordance with the Bid Documents.

Waste characterization sampling requirements are described in Specification Section 02990.

All soils and materials that have been properly characterized, shall be transported in properly licensed and permitted vehicles to an approved disposal or recycling facility, properly licensed and permitted to receive the type of waste being shipped for disposal.

3.2.6 Excavation Project Monitoring Well Installation

Following site restoration activities, certain replacement groundwater monitoring wells [(29-MW2S(R), 29-MW7S(R), 29-MW9S(R), and 29-MW14S(R)] and two new groundwater monitoring wells (29-MW20S and 29-MW21S) shall be installed. The wells shall be installed and constructed as shown on the Project Plans and in accordance with Specification Section 02730.

3.2.7 Excavation Project Optional Tasks

In addition to the standard SOW described above, certain other tasks, as further discussed below, may be required due to FAA or other project stakeholder requests. For the excavation-based remedial alternative, bid options include installation of replacement extraction wells 29-EW1(R) and 29-EW3(R), and reinstallation of salvaged sprinkler system components including sprinkler heads and water sensing station equipment. If selected as a bid option, the replacement extraction wells shall be reconnected to the treatment plant via new piping and conduits connected to the temporarily abandoned piping and conduits in the vicinity of the excavation. New wiring shall be installed where indicated, and the extraction wells, sprinklers, and the water testing station shall be reactivated and tested for proper operation as specified.

3.2.8 Excavation Project Reporting

The RC shall submit all required reports in accordance with all Specification Sections including the disposal report described in Specification Section 02990.

3.3 Specific Project Elements for ISTR Option/Alternative (If Selected)

3.3.1 ISTR Site Preparations

The site shall be prepared as described in the Bid Documents prior to installing and operating the approved ISTR system components. These activities shall include: installing sedimentation and erosion controls, placing site trailers, installing temporary utilities, installing suitable perimeter safety fencing, completing preliminary surveys and testing, and setting temporary sanitary facilities as needed.

Prior to soil disturbing activities, a private utility mark-out contractor shall be utilized to locate any utilities in the excavation area.

3.3.2 ISTR Project Demolition Work

The same existing remedial system components that would be demolished for the excavation-based alternative would be demolished for the ISTR-based alternative prior to its implementation. See Section 3.2.2 for additional details.

3.3.3 ISTR Installation and Operation

If the ISTR alternative is approved, the RC shall design, furnish, install, operate, maintain, decommission, and remove a complete, temporary, in situ thermal remediation (ISTR) system at the site for purposes of meeting the specified performance requirements. The ISTR system shall utilize electrical resistance heating (ERH) with a soil vapor extraction system (VES) and/or other approved technologies, in order to remediate the targeted contaminants by volatilization, and, where applicable, in situ steam stripping and/or thermally enhanced degradation. The primary performance requirement is that the ISTR system achieve certain remedial endpoints for BTEX in soil, at specified sampling locations, within a specified period from system activation. Further details are provided in Specification Section 11305.

The Contractor shall be responsible for supplying all labor, materials, equipment, components, appurtenances, and incidental costs and fees necessary to successfully execute the performance requirements under existing and reasonably expected conditions. System equipment and components may include, but are not limited to: power supply units; output transformers; bonding and grounding systems; electrodes and appurtenances (e.g., wetting systems, vent/recovery pipes, conductive fill materials); insulating cap/vapor cap; SVE blower systems (blowers, silencers); condensers; heat exchangers; offgas treatment systems; water/condensate treatment systems; monitoring and control systems (thermocouples, pressure sensors, SCADA units, interlock instrumentation); wiring, cabling, connectors/connections; piping; valves, manifolds, etc.

The RC shall be responsible for all aspects of ISTR system design, installation, operation, maintenance, decommissioning, and removal, including, but not limited to: mobilization and demobilization; preliminary investigations and surveys; utility location and clearances; utility usage fees; review of available site information and conditions; general conditions; AOA training

and/or other FAA-required training; health, safety, and emergency response; environmental protection; project management; submittals and revisions; permit applications; system testing and adjustments; sampling and analysis of soil, groundwater, and air, as required; equipment and personnel decontamination; waste management and disposal; removal and offsite disposal of ISTR system components upon project completion, etc.

3.3.4 ISTR Project Backfilling, Compaction, and Site Restoration

Following certain phases of ISTR project implementation (installation and/or removal of below grade components and vapor/thermal cap) associated excavations shall be backfilled and compacted in accordance with Specification Sections 02225 and 02226. Prior to its use, backfill material shall be tested in accordance with the Project Specifications for physical and chemical characteristics. Only those materials meeting the requirements of the Specifications shall be used onsite. During compaction activities, in-place soils shall be tested in accordance with the requirements of Specification Section 02225 or 02226, as applicable.

Upon completion of backfilling and compaction of all the excavations, the ground surface shall be restored to specified conditions. Temporary features will be removed. Except where specified otherwise, areas shall be restored with turf in accordance with Specification Section 02935.

3.3.5 ISTR Project Reporting

The RC shall submit all required reports in accordance with all Specification Sections including the various ISTR system reports described in Section 11305.

APPENDIX A

AREA 29 ROD

APPENDIX A

AREA 29 ROD

SEP 20 1996

Certified Mail
Return Receipt Requested

Mr. Gary E. Poulsen, P.E.
Manager, Plant Engineering and Operations Division
U.S. Department of Transportation Federal Aviation Administration
William J. Hughes Technical Center
ACM-400
Atlantic City International Airport, NJ 08405

Re: Transmittal of Signed Record of Decision for Areas 29 and K
Federal Aviation Administration Technical Center

Dear Mr. Pouslen:

Enclosed is a copy of the Declaration of the Record of Decision, which I have co-signed on behalf of the U. S. Environmental Protection Agency (EPA), for Areas 29 and K at the Federal Aviation Administration (FAA) Technical Center, at the Atlantic City International Airport, NJ. Based on our review of FAA's Environmental Investigation Reports, baseline risk assessment, Feasibility Study, and ongoing quarterly ground water monitoring results, the EPA concurs with the Record of Decision.

The Record of Decision for Area 29 - Fire Training Area and Area K - Storage Area calls for extraction of contaminated shallow ground water with on-site carbon adsorption treatment for volatile organic compounds and excavation of PCB and petroleum hydrocarbon contaminated soils with off-site landfill disposal.

Your efforts to address environmental concerns at FAA are to be commended. If you have any questions, please have your staff contact Betsy Donovan, project manager for FAA, at (212) 637-4303.

Sincerely,

Jeanne M. Fox
Regional Administrator

Enclosure

cc: R. Shinn, Commissioner
New Jersey Department of Environmental Protection (w/encl.)

bcc: B. Bellows, EPD (w/o encl.)
R. Vaughn, ERRD-SPB (w/encl.)
B. Aber, ORC (w/encl.)
W. Lawler, OPM-EIB (w/encl.)
B. Wing, ERRD-FFS (w/encl.)
B. Donovan, ERRD-FFS (w/encl.)
K. Buch, FAA (w/encl.)
I. Curtis, NJDEP (w/encl.)
R. Smith, TRC (w/encl.) ✓

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2
290 BROADWAY
NEW YORK, NY 10007-1866

SEP 2 0 1996

Mr. Keith Buch
RI/FS Project Manager
FAA Technical Center
Resource Management Service
Facility Engineering & Operations Division, ACM-440
Atlantic City International Airport, NJ 08405

Re: Record of Decision: Area 29 - Fire Training & Area K Storage
Record of Decision: Area B - Navy Fire Test Facility
FAA Technical Center, Atlantic City Airport, New Jersey

Dear Mr. Buch:

This letter is being sent to memorialize revisions to both Records of Decision listed above. The enclosed revisions were agreed upon and made pursuant to telephone conversations and a facsimile transmission on September 20, 1996 between the U.S. Environmental Protection Agency Region II (EPA) Remedial Project Manager and the Federal Aviation Administration RI/FS Project Manager.

The revised pages are enclosed and have also been included in the respective Records of Decision which are awaiting signature by the EPA Regional Administrator. If you have any questions, please call me.

Sincerely,

Betsy Donovan
Remedial Project Manager
(212) 637-4303

Enclosure

cc: G. Poulsen, FAA (w/ enclosure)
I. Curtis, NJDEP "
R. Smith, TRC "
R. Wing, ERRD "

AREAS 29 & K
REVISIONS TO ROD

Although not required by EPA, the FAA will establish a Declaration of Environmental Restrictions where constituents of concern in soil exceed the New Jersey residential soil cleanup criteria, to prevent further development of the site for residential use.

XI. STATUTORY DETERMINATIONS

Under Section 121 of CERCLA and Section 300.430(f) of the NCP, selected remedies must meet certain statutory and regulatory requirements. These requirements and a description of how the selected remedy satisfies each requirement are presented below.

Protection of Human Health and the Environment

The preferred alternative provides the greatest overall protection of human health and the environment by providing remediation of soil contaminants and treatment of both VOCs and SVOCs in perched ground water. It is effective in the short term, with only minimal risks associated with its installation and operation. It also utilizes a proven treatment technology which is readily implemented, and its long-term effectiveness and permanence are expected to be good.

Compliance with ARARs

The selected remedy will attain federal ARARs and those New Jersey ARARs which are more stringent than federal ARARs for ground water, as well as TBCs for soil quality. A summary of applicable chemical-specific, location-specific and action-specific ARARs and TBCs is presented by media in Table 5. Table 6 presents numerical chemical-specific ARAR and TBC values.

The selected remedy is expected to achieve compliance with NJDEP's non-residential soil cleanup standards for PCBs (2 ppm) and total organic compounds (including TPH) (10,000 ppm) through the excavation and off site disposal of any soils exceeding these standards. ARARs for ground water (the most stringent of state or federal MCLs and New Jersey Ground Water Quality Standards) will be achieved through the extraction of perched ground water and subsequent treatment through carbon adsorption.

The regulations established under RCRA, the Hazardous Materials Transportation Act, TSCA, the New Jersey Hazardous Waste Regulations, the New Jersey Hazardous Discharge Site Remediation Requirements, and the New Jersey Pollutant Discharge Elimination System will apply to the implementation of this alternative. Compliance with the Pinelands Protection Act, including the Pinelands Comprehensive Management Plan, a TBC, will be required due to the facility's location within the Pinelands.

Cost-Effectiveness

The selected remedy is comparable in cost to the other alternatives which provide remediation of the contaminated soils and the treatment of perched ground water. The alternatives are similar in their handling of contaminated soils but vary in their means of ground water treatment. The ground water treatment component of Alternative 4 provides treatment of both VOCs and SVOCs while utilizing a proven treatment technology. Therefore, it provides the greatest overall cost-effectiveness of the alternatives considered.

TABLE 5 (Continued)

APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS (ARARs)
AND TO-BE-CONSIDERED CRITERIA (TBCs)
AREA 29 - FIRE TRAINING AREA AND
AREA K - STORAGE AREA NEAR AREA 29
FAA TECHNICAL CENTER

CHEMICAL-SPECIFIC TBCs

- NJ Soil Cleanup Criteria
  Non-promulgated criteria used to determine the potential need for soil remediation

LOCATION-SPECIFIC ARARS

- Safe Drinking Water Act
  Protection of Ground Water Use for Potable Water Supply [40 CFR 149]
  Protects aquifers designated as sole source aquifers from actions by federally-funded programs

LOCATION-SPECFIC TBCs

- Pinelands Comprehensive Management Plan (NJAC 7:50)
  Establishes standards and requirements pursuant to the Pinelands Protection Act designed to promote orderly development of the Pinelands so as to preserve and protect the resources of the Pinelands, including wetland, ground water and air resources, among others.

ACTION-SPECIFIC ARARS

- NJ Water Pollution Control Act
  NJPDES Permit/Discharge Requirements [NJAC 7:14A-2.1]
  State standards for discharges to ground water

- NJ Water Supply Management Act
  General Water Supply Management Regulations [NJAC 7:19-1.4, 1.5, 1.6(b) and 2.2]
  Well Drilling Permits [NJSA 58:4A-14]
  Well Certification Forms [NJAC 7:8-3.11]
  State regulations governing the extraction of ground water at a rate which exceeds 100,000 gallons per day and the drilling and construction of new wells; applicable should the extraction rate of the ground water extraction system exceed 100,000 gallons per day and applicable to the installation of ground water extraction wells

- Toxic Substances Control Act
  Requirements for PCB Spill Cleanup [40 CFR 761.125]
  Establishes requirements for the removal and disposal of PCB-contaminated materials.

AREA B
REVISIONS TO ROD

Please note: Table 5's title has been revised. This revision (title only) has been included on all Table 5 pages (42 through 45.) Pages containing revisions to the title alone, have not been included with the following revised pages.

TABLE 5 (Continued)

APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS (ARARs)
AND TO-BE-CONSIDERED CRITERIA (TBCs)
APPLICABLE TO THE SELECTED REMEDY
AREA B - NAVY FIRE TEST FACILITY
FAA TECHNICAL CENTER

LOCATION-SPECIFIC TBCs

- Pinelands Comprehensive Management Plan (NJAC 7:50)
  Establishes standards and requirements pursuant to the Pinelands Protection Act designed to promote orderly development of the Pinelands so as to preserve and protect the resources of the Pinelands, including wetland, ground water and air resources, among others.

ACTION-SPECIFIC ARARS

- Clean Air Act
  New Source Performance Standards (40 CFR 50)
  Requires Best Available Control Technology (BACT) for new sources and sets emissions limitations

- Clean Air Act
  National Emissions Standards for Hazardous Air Pollutants (40 CFR 61)
  Establishes emissions limitations for hazardous air pollutants

- New Jersey Air Pollution Control Regulations
  Permits and Emissions Limitations for VOCs (NJAC 7:27-16)
  Requires sources which emit VOCs be registered and permitted with the NJDEP and meet maximum allowable emissions rates and design specifications

- NJ Water Supply Management Act
  Well Drilling Permits [NJSA 58:4A-14]
  Well Certification Forms [NJAC 7:8-3.11]
  State regulations governing the drilling and construction of new wells

- New Jersey Water Pollution Control Act
  New Jersey Pollutant Discharge Elimination System Permit/Discharge Requirements [NJAC 7:14A-2.1]
  State standards for discharges to ground water (applicable to contingency remedy only)

- Resource Conservation and Recovery Act (RCRA)
  Identification and Listing of Hazardous Waste [40 CFR 261]
  Waste classification procedures applicable to the characterization of any waste materials generated as a result of vapor treatment, if determined to be necessary

The regulations established under the Clean Air Act, the New Jersey Air Pollution Control Regulations and the New Jersey Water Supply Management Act will apply to the implementation of this alternative. If the contingency remedy is employed, compliance with the Clean Water Act and the New Jersey Pollutant Discharge Elimination System regulations will also be maintained. Resource Conservation and Recovery Act regulations and New Jersey regulations regarding the identification, generation, transportation and management of hazardous waste have been included as ARARs to address potential waste materials which could be generated as a result of vapor treatment, if determined to be necessary. Under both the selected remedy and the contingency remedy, compliance with the Pinelands Protection Act, including the Pinelands Comprehensive Management Plan, a TBC, and the appropriate federal and state location-specific wetland and floodplain regulations will be required due to the location of the facility within the Pinelands and the presence of delineated wetland areas and the 100-year floodplain in the vicinity of the South Branch of Doughty's Mill Stream.

Cost-Effectiveness

While the selected remedy is one of the more costly alternatives, it is considered to be cost-effective based on the added degree of overall protection of human health and the environment that it offers through its potential treatment of subsurface product residuals and shorter remedial time frame. Due to the relatively innovative nature of air sparging/vacuum extraction, published treatment costs are not widely available. However, costs can be estimated based on the previously provided assumptions. If, based on the completion of pilot-scale studies, design parameters change from those assumed above, the estimated cost could also vary.

The contingency remedy is also cost-effective, providing effective treatment at a slightly lower cost than the other alternatives considered.

Utilization of Permanent Solutions and Alternative Treatment Technologies

The FAA, in cooperation with the EPA, has determined that the selected remedy and the contingency remedy utilize permanent solutions and treatment technologies to the maximum extent practicable. This determination was made based on the comparative evaluation of alternatives with respect to long-term effectiveness and permanence, reduction of toxicity, mobility, or volume through treatment, short-term effectiveness, implementability, and cost, as well as the statutory preference for treatment as a principal element and state and community acceptance.

The main difference between the remedial alternatives which underwent evaluation is associated with the type of product/ground water treatment utilized. The selected alternative provides in situ treatment of product/ground water and offers potential in situ treatment of product residuals. Therefore, it is expected to result in the achievement of remedial goals in a shorter time frame than a pump-and-treat alternative in which no residual treatment would occur. The removal of subsurface contamination is permanent. Therefore, the selected remedy's anticipated long-term effectiveness, reduction of toxicity, mobility or volume through treatment and short-term effectiveness were the most decisive factors in its selection. However, until additional site-specific studies are conducted to further define the applicability of this technology to the subsurface conditions at Area B, there is a degree of uncertainty associated with the alternative's long-term

TRC Environmental Corporation

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Telephone 860-289-8631
Facsimile 860-298-6399

July 2, 1996

Mr. Keith Buch, COTR
FAA Technical Center
Environmental Programs Branch
Building 270, Room A117
Atlantic City International Airport, NJ 08405

Re: Final Record of Decision
Area 29 - Fire Training Area
Area K - Storage Area near Area 29
TRC Project No. 01040-0010-~~00304~~ 00220

Dear Mr. Buch:

Submitted herewith are four copies of the Final Record of Decision (ROD) for Area 29, the Fire Training Area, and Area K, the Storage Area near Area 29 at the FAA Technical Center. With the exception of the incorporation of the public meeting transcript as Appendix C, the document has not been revised from its Draft Final format.

Should you have any questions or comments regarding this submittal, please do not hesitate to call Jean Oliva or me.

Very truly yours,

TRC ENVIRONMENTAL CORPORATION

Robert C. Smith

Robert C. Smith, P.E.
Project Manager

RCS:amm
Enclosure

cc: Ms. Betsy Donovan, USEPA - Region II (with 2 copies and document on diskette)
Mr. Ian Curtis, NJDEP (with 3 copies)
Mr. Sean Clancy, Atlantic County (with 1 copy)
K. Swigon, Pinelands Commission (with 1 copy)

RECORD OF DECISION

AREA 29 - FIRE TRAINING AREA
AND
AREA K - STORAGE AREA
NEAR AREA 29

FAA TECHNICAL CENTER
ATLANTIC CITY INTERNATIONAL AIRPORT
NEW JERSEY

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DECLARATION FOR THE RECORD OF DECISION

Area 29 - Fire Training Area and
Area K - Storage Area Near Area 29
FAA Technical Center

FACILITY NAME AND LOCATION

Federal Aviation Administration (FAA) Technical Center, Atlantic County
Atlantic City International Airport, New Jersey

STATEMENT OF BASIS AND PURPOSE

This decision document presents the selected remedial action for Area 29, the Fire Training Area and Area K, a former drum and tank storage area located adjacent to Area 29 at the FAA Technical Center, Atlantic City International Airport, New Jersey. The remedial action decision was chosen in accordance with the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), as amended by the Superfund Amendments and Reauthorization Act (SARA), and, to the extent practicable, the National Contingency Plan (NCP). This decision is based on the administrative record for Areas 29 and K.

The Commissioner of the New Jersey Department of Environmental Protection and the Pinelands Commission concur with the selected remedy (Appendix A).

ASSESSMENT OF THE SITE

Actual or threatened releases of hazardous substances from this site, if not addressed by implementing the response action selected in this Record of Decision (ROD), may present an imminent and substantial threat to public health, welfare, or the environment.

DESCRIPTION OF THE REMEDY

The selected remedy for Areas 29 and K addresses the principal threat by controlling the migration of and treating dissolved chemicals in ground water. Contaminated soils will be excavated and disposed of off site. The selected remedy for Areas 29 and K includes the following components:

- Excavation of approximately 350 cubic yards of PCB contaminated soil and transport off site for disposal at a licensed facility;
- Excavation of approximately 50 cubic yards of petroleum hydrocarbon contaminated soil and transport off site for disposal at a licensed facility;
- Demolition and excavation of debris from the former circular burn area and concrete burn pad and transport off site for disposal;

- Extraction of perched ground water (a zone of ground water located above a low-permeability clay layer and above the true water table aquifer) and on-site treatment using carbon adsorption and/or other treatment processes to remove organic compounds. Treated ground water will be recharged to the subsurface in the vicinity of the site.

DECLARATION OF STATUTORY DETERMINATIONS

The selected remedy is protective of human health and the environment, complies with federal and state requirements that are legally applicable or relevant and appropriate to the remedial action and is cost-effective. This remedy utilizes permanent solutions and alternative treatment (or resource recovery) technologies to the maximum extent practicable, and it satisfies the statutory preference for remedies that employ treatment that reduce toxicity, mobility, or volume as their principal element.

Gary Poulsen — 7/19/96

(Signature) (Date)

Gary E. Poulsen, P.E., Manager
Plant Engineering & Operations Branch
FAA Technical Center

William Muszynski — 9/20/96

(Signature) (Date)

Jeanne M. Fox
Regional Administrator
United States Environmental Protection Agency, Region II

DECISION SUMMARY
RECORD OF DECISION
Area 29 - Fire Training Area and
Area K - Storage Area Near Area 29
FAA Technical Center

I. SITE NAME, LOCATION AND DESCRIPTION

The FAA Technical Center encompasses an area of approximately 5,000 acres in Atlantic County, New Jersey, eight miles northwest of Atlantic City. Among the installations on the property are the Atlantic City International Air Terminal, the New Jersey Air National Guard 177th Fighter Interceptor Group, the Upper Atlantic City Reservoir, the Laurel Memorial Park Cemetery and the extensive facilities of the FAA Technical Center. Atlantic City's municipal water supply is provided by nine ground water production wells located just north of the Upper Atlantic City Reservoir on FAA Technical Center property as well as by water drawn directly from the Atlantic City Reservoirs. The reservoirs are fed by the North and South Branches of Doughty's Mill Stream, which traverse portions of the FAA Technical Center grounds. The public water supply facilities on site are owned by the Atlantic City Municipal Utilities Authority (ACMUA).

The FAA Technical Center is located within the Atlantic Coastal Plain, a broad, flat plain which encompasses the southern three-fifths of New Jersey. The area within two miles of the FAA Technical Center has a maximum relief of about 65 feet, ranging from an elevation of ten feet above mean sea level (msl) at the Lower Atlantic City Reservoir to 75 feet msl to the west and north of the airport. The facility itself is relatively flat; slopes generally range from 0 to 3 percent. Forested areas exist north, south, and east of the airport runways. These areas comprise about 40% of the 5,000-acre FAA Technical Center property. The remaining 60% of the site has been cleared for FAA facilities and consists of buildings and paved surfaces, grassed lawns and native grassland and shrubs adjacent to the runways.

The area within one mile of the FAA Technical Center boundaries includes open or forested land and commercial and residential areas. A large forested tract containing no commercial or residential property exists west of the FAA Technical Center. To the east, the property is bordered by the Garden State Parkway, the Lower Atlantic City Reservoir, and the forested land surrounding the reservoir. The area north of the FAA Technical Center contains commercial properties along the White Horse Pike (Rt. 30) and a concentrated residential area, Pomona Oaks, north of the White Horse Pike. The closest residential area south of the FAA Technical Center is a series of three trailer parks at the intersection of Tilton Road and Delilah Road. The majority of commercial and residential areas south of the FAA Technical Center are greater than 2,000 feet away from the FAA Technical Center property, south of the Atlantic City Expressway. All residential areas in the vicinity of the FAA Technical Center appear to be upgradient or otherwise isolated from the ground water flow at the FAA Technical Center.

Area 29, referred to as the Fire Training Area, is located northeast of the Atlantic City International Airport runways and southwest of White Horse Pike, as indicated in Figure 1. The site was constructed in the early 1970s for the training of airport fire fighting personnel. The facility consisted of a circular burn area approximately 150 feet in diameter, a small concrete burn pad, two

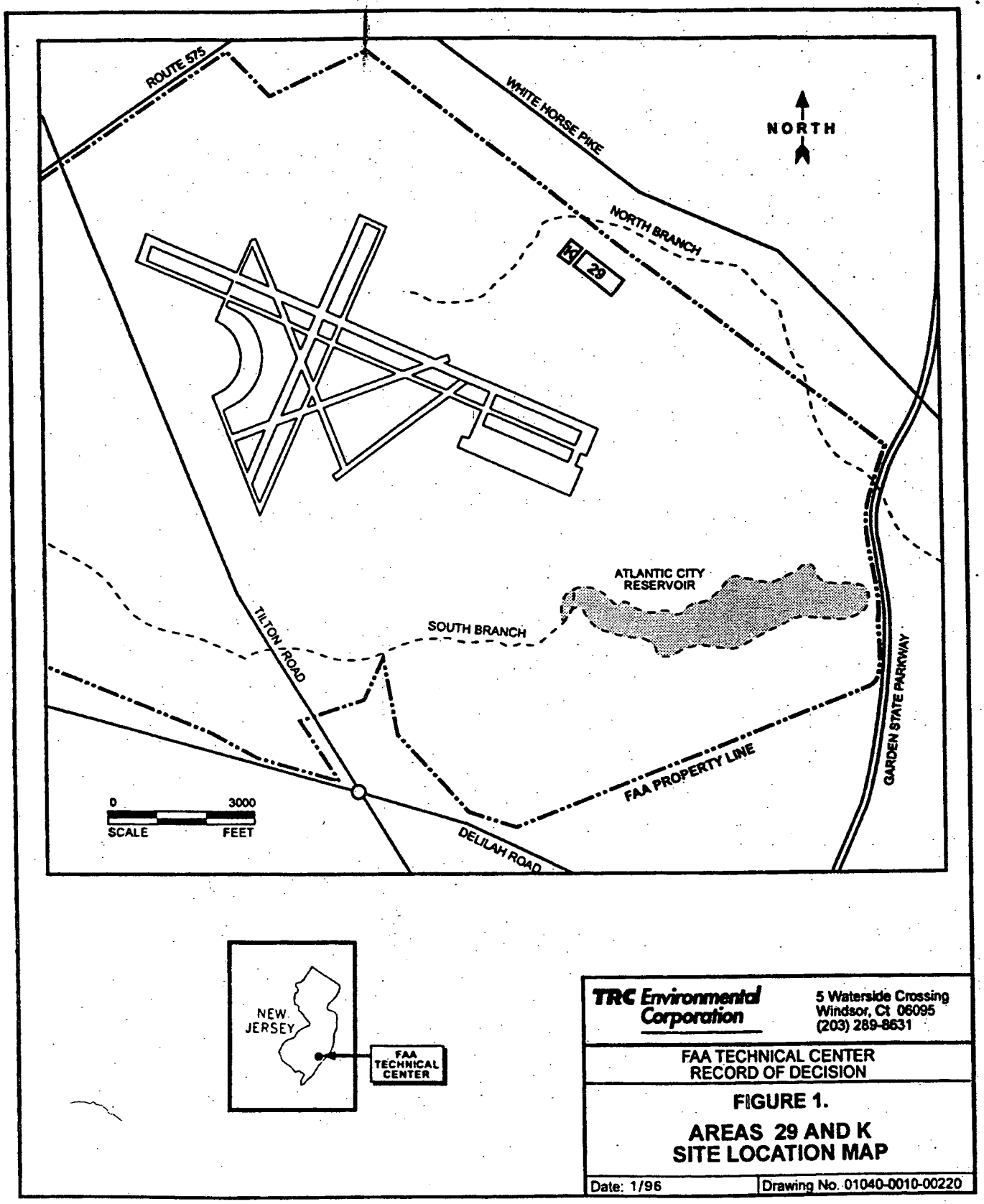
ROUTE 575
WHITE HORSE PIKE
NORTH
NORTH BRANCH
29
ATLANTIC CITY RESERVOIR
SOUTH BRANCH
TILTON ROAD
FAA PROPERTY LINE
GARDEN STATE PARKWAY
DELILAH ROAD
0
3000
SCALE
FEET
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FIGURE 1.
AREAS 29 AND K
SITE LOCATION MAP
Date: 1/96
Drawing No. 01040-0010-00220

above ground fuel tanks on a small hill, and two underground tanks for the collection of runoff from the burn pads (Figure 2). A more complete description of Area 29 can be found in the Phase I Environmental Investigative/Feasibility Study (EI/FS) Report (TRC, March, 1989) at pages 11-1, 11-2 and 11-8 to 11-16.

Area K, referred to as the Storage Area Near Area 29, is located northwest of the test burn areas at Area 29 (Figure 2). Aerial photographs taken in 1974 and 1983 show that drums and tanks were once stored in this area. Since this area was investigated in conjunction with Area 29, separate detailed descriptions of Area K are not provided in the EI/FS Report (TRC, March, 1989).

II. SITE HISTORY AND ENFORCEMENT ACTIVITIES

A. Land Use

The first significant development of what is now FAA Technical Center property came during the 1930s when the Upper Atlantic City Reservoir was created by damming the South Branch of Doughty Mill Stream. Prior to 1942, the entire property was wooded, except for the presence of large borrow pits near the present-day Research and Development (R&D) facilities. On a 1940 aerial photograph, several dirt roads and what appeared to be a railroad right-of-way traversed the property. In the early 1940s, a Naval Air Base and the Atlantic City Municipal Airport, including most of the existing runways, were constructed over much of the eastern two-thirds of the property. Many of the buildings in the western built-up area were also constructed at this time. In 1958, the Navy transferred its interests to the Airways Modernization Board (AMB).

The FAA took over the operations of the AMB in November 1958. The development of most of the R&D portion of the facility south of the Upper Atlantic City Reservoir occurred in the early 1960s. The FAA's large Technical/Administrative Building was constructed in 1979. The New Jersey Air National Guard has maintained their facilities at the northern end of the built-up area since 1973.

Area 29 was constructed in the early 1970s for the training of airport fire fighting personnel. Full scale aircraft test burns were conducted on the large circular burn area, while smaller fuel fires were extinguished on the concrete pad. An underground drain system was used to collect runoff from the circular burn area and to divert it to a 10,000-gallon underground circular storage tank. Runoff from the concrete pad was collected in a 5,000-gallon underground storage tank. Both of these tanks were emptied, removed, and disposed of off site in an environmentally safe manner in December 1988. Area K was formerly used to store drums and tanks. The drums were removed by the fall of 1986 and were also disposed of off site in an environmentally acceptable manner.

The FAA Technical Center was listed on the National Priorities List (NPL) on August 30, 1990, 55 FR 35502, with an effective date of October 1, 1990. The FAA entered into an Interagency Agreement (IAG) with the EPA on May 17, 1993. The IAG is a legally enforceable document that memorializes FAA's commitment to remediate the site and defines the role of EPA in the cleanup process.

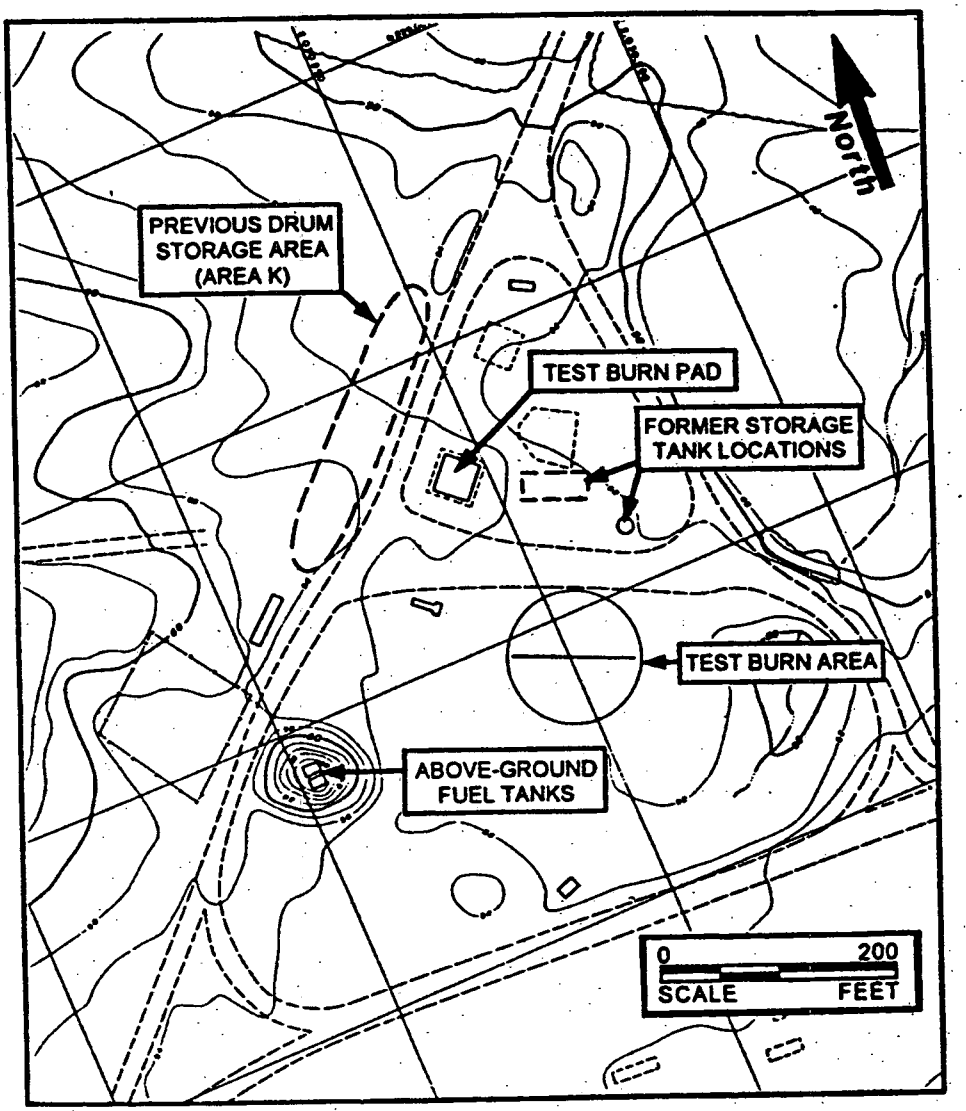

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FIGURE 2. **AREAS 29 AND K SITE PLAN**	
Date: 1/96	Drawing No. 01040-0010-00220

B. Initial Investigations

In 1983, the New Jersey Department of Environmental Protection (NJDEP) commissioned Roy F. Weston (Weston) to conduct an assessment of potential pollution sources that could impact the then-proposed Atlantic City well field. The assessment included a review of all data on possible contaminant sources in the area, limited field investigation of these sources, and soil and ground water sampling at the five areas considered most threatening to ground water supplies in the area. The entire FAA Technical Center was included in the Weston Study, and the five areas identified by Weston were all located on the FAA Technical Center property. Weston's report led the FAA to initiate the present EI/FS, and the five areas identified by Weston have been investigated further, along with additional areas identified by the FAA.

C. Environmental Investigation/Feasibility Study

Area 29 is one of the areas of concern identified by the Weston Study. Weston's investigation of Area 29 included the installation and sampling of three ground water monitoring wells (29-MW1S to 29-MW3S). One of these wells, 29-MW2S located southeast of the concrete burn pad and the two underground storage tanks, was contaminated with several volatile organic compounds (VOCs) (benzene, 1,1-dichloroethane, ethyl benzene, toluene, and xylenes) and two semi-volatile organic compounds (SVOCs) (naphthalene and phenol).

The FAA's Environmental Investigation (EI) of Area 29 was conducted in two phases between December 1986 and December 1988. Due to its proximity of Area 29, Area K was included in the scope of Area 29 investigations.

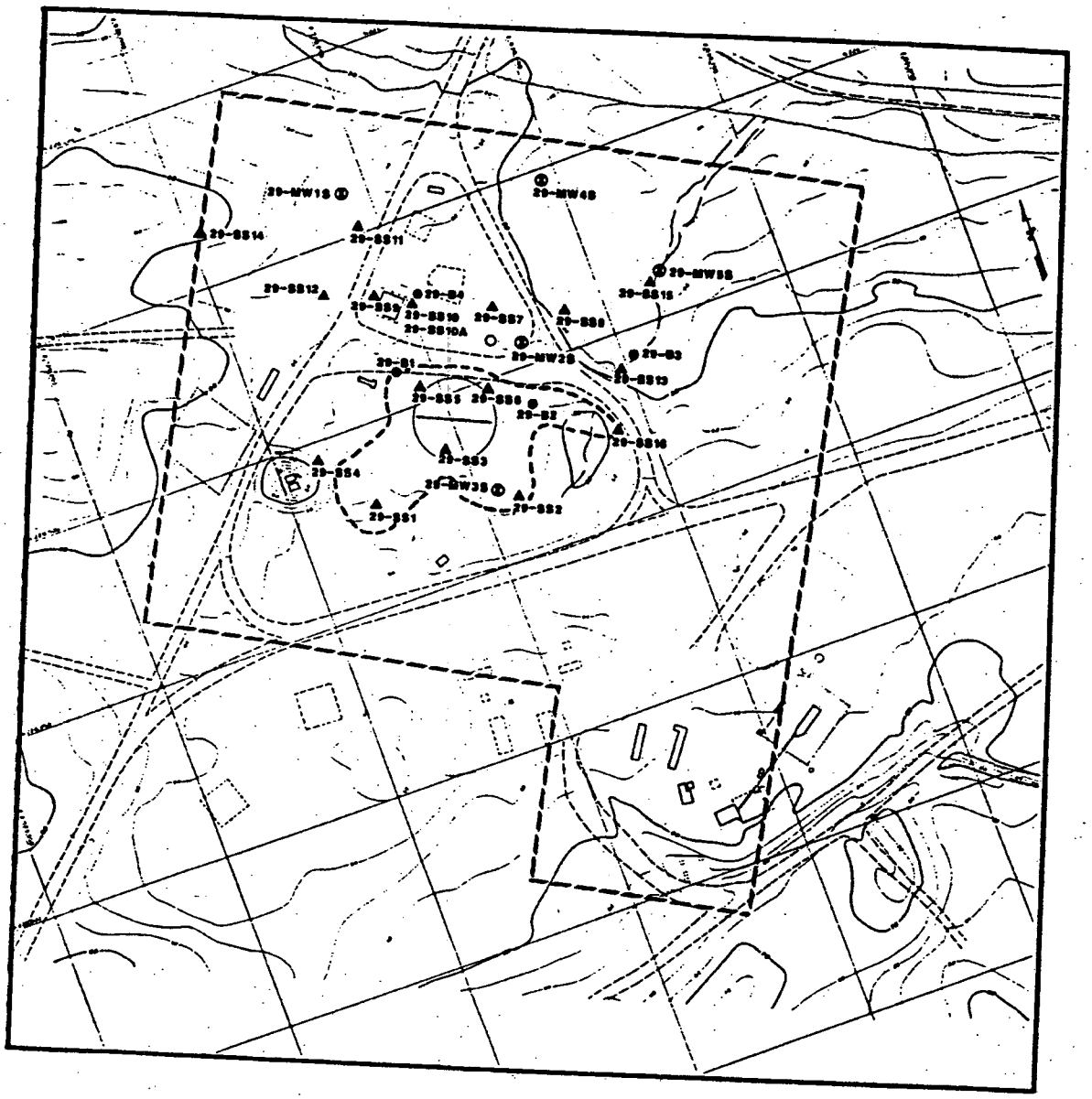
Area 29

The EI was conducted to determine if past activities at Areas 29 and K had impacted soils and ground water. Following the two phases of the EI, ground water sampling was conducted in December 1991 and quarterly ground water sampling has been performed since May 1993.

Phase I. Site investigation activities conducted during the Phase I EI included a soil gas survey, geophysical survey, surface soil sampling, subsurface soil sampling, ground water sampling, air monitoring, and a hydrogeological investigation. Each of these Phase I EI components is discussed in the Phase I EI/FS Report (TRC, March, 1989) and briefly below. Figure 3 provides the Phase I EI sampling locations.

- A soil gas survey was conducted on a 100-foot grid of the area to identify potentially contaminated soils or contaminant plumes through the presence of elevated levels of VOCs within the soil's pore space. Elevated organic vapor concentrations (greater than 1,000 parts per million (ppm)) were identified in the area surrounding the circular test burn area.

- A geophysical survey (EM-31 and EM-34) and resistivity profiling to detect buried metal objects were also conducted during the Phase I investigations. No anomalies indicative of buried waste or contaminant plumes were identified.



NOTE: SOIL GAS SURVEY INCLUDES WORK DONE AT AREA F

0 400
SCALE FEET

LEGEND

- AREA OF SOIL GAS SURVEY
- MONITORING WELL
- SOIL BORING
- SURFACE SOIL SAMPLE
- SOIL GAS ANOMALY

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FIGURE 3.

PHASE I SAMPLING LOCATIONS AND MONITORING WELLS

Date: 1/96 | Drawing No. 01040-0010-00220

- Sixteen (16) surface soil samples (29-SS1 to 29-SS16) were collected including one background sample collected from the western side of the site. Seven of the surface soil samples were analyzed for priority pollutants plus 40 (PP+40), while the remaining nine were analyzed for total petroleum hydrocarbons (TPH). The presence of TPH was detected in surface soils over a large portion of the site, with the highest concentrations present adjacent to the circular burn area. Only one of the seven surface soil samples analyzed for PP+40 (29-SS3 within the circular burn area) exhibited VOCs. Polychlorinated biphenyls (PCBs) were also detected in 29-SS3 and in 29-SS10 located next to the concrete burn pad.

- Four 10-foot deep soil borings were drilled and eight subsurface soil samples (two from each boring) were collected to assess the vertical extent of contamination and site geology. One sample from each boring was analyzed for PP+40, while the other sample was analyzed for TPH. The presence of TPH was detected in three of the four borings, but at concentrations less than those identified in surface soils. Low concentrations of VOCs in one boring location (29-B2, east of the circular burn area) and SVOCs in all four boring locations were also identified. PCBs were detected in one of the samples from 29-B4, located near the concrete burn pad.

- Two shallow monitoring wells were also installed during the Phase I EI. The two Phase I EI monitoring wells as well as the three monitoring wells installed by Weston were sampled to assess ground water quality. All five wells were sampled for PP+40. With the exception of phenol in all five wells, the detection of VOCs and SVOCs was limited to 29-MW2S. This limited VOC presence in ground water was consistent with the results obtained by Weston prior to the Phase I EI.

- Air monitoring for particulates, inorganics, VOCs, SVOCs, and PCBs was conducted during the drilling of borings 29-B1, 29-B2, and 29-B3. Four inorganics and one VOC (toluene) were detected, but at concentrations well below the applicable occupational guidelines.

- The Phase I EI also indicated that a clay layer of variable thickness exists at a depth of 10 to 14 feet over the western and central portions of the site, including the areas beneath the circular burn area and the concrete burn pad. Where the soil in the unsaturated zone is locally saturated because it overlies a low-permeability clay unit above the water table, the water within this zone is referred to as perched ground water. At Area 29, a zone of perched ground water was identified above the clay layer. While ground water flow in the regional true water table was determined to be towards the east-southeast (Figure 4), the flow of perched ground water was estimated to be much more variable due to localized changes in the slope of the clay layer. Although ground water outside the perched zone did not appear impacted, the potential for lateral or vertical movement of dissolved chemical constituents from the perched zone into the true water table was identified.

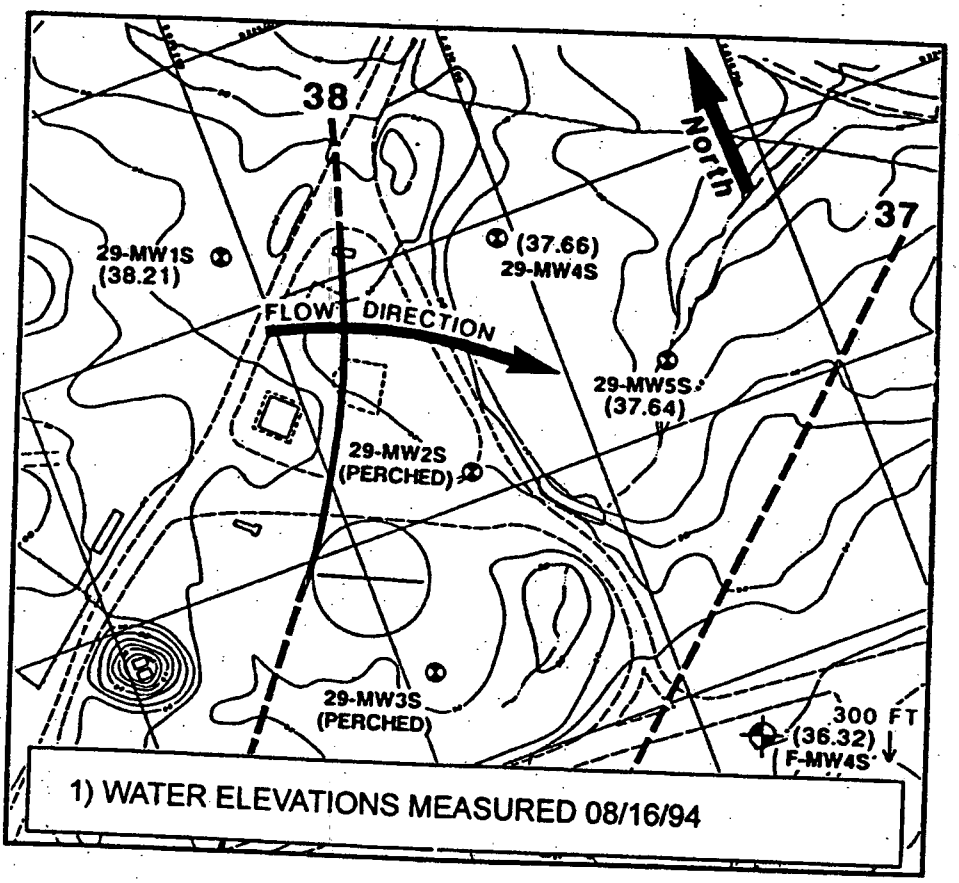

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FIGURE 4. **PRESUMED GROUND WATER FLOW DIRECTION IN THE TRUE WATER TABLE**	
Date: 1/96	Drawing No. 01040-0010-00220

Phase II. Following the Phase I EI, a Phase II investigation was conducted to further define the lateral extent of PCB contamination in surface soils and to investigate the potential presence of soil contamination beneath the two underground runoff collection tanks removed during the Phase II EI. Each of these components of the Phase II EI is discussed in the Phase II EI/FS Report (TRC, January, 1990) and briefly below. Figure 5 provides the Phase II sampling locations.

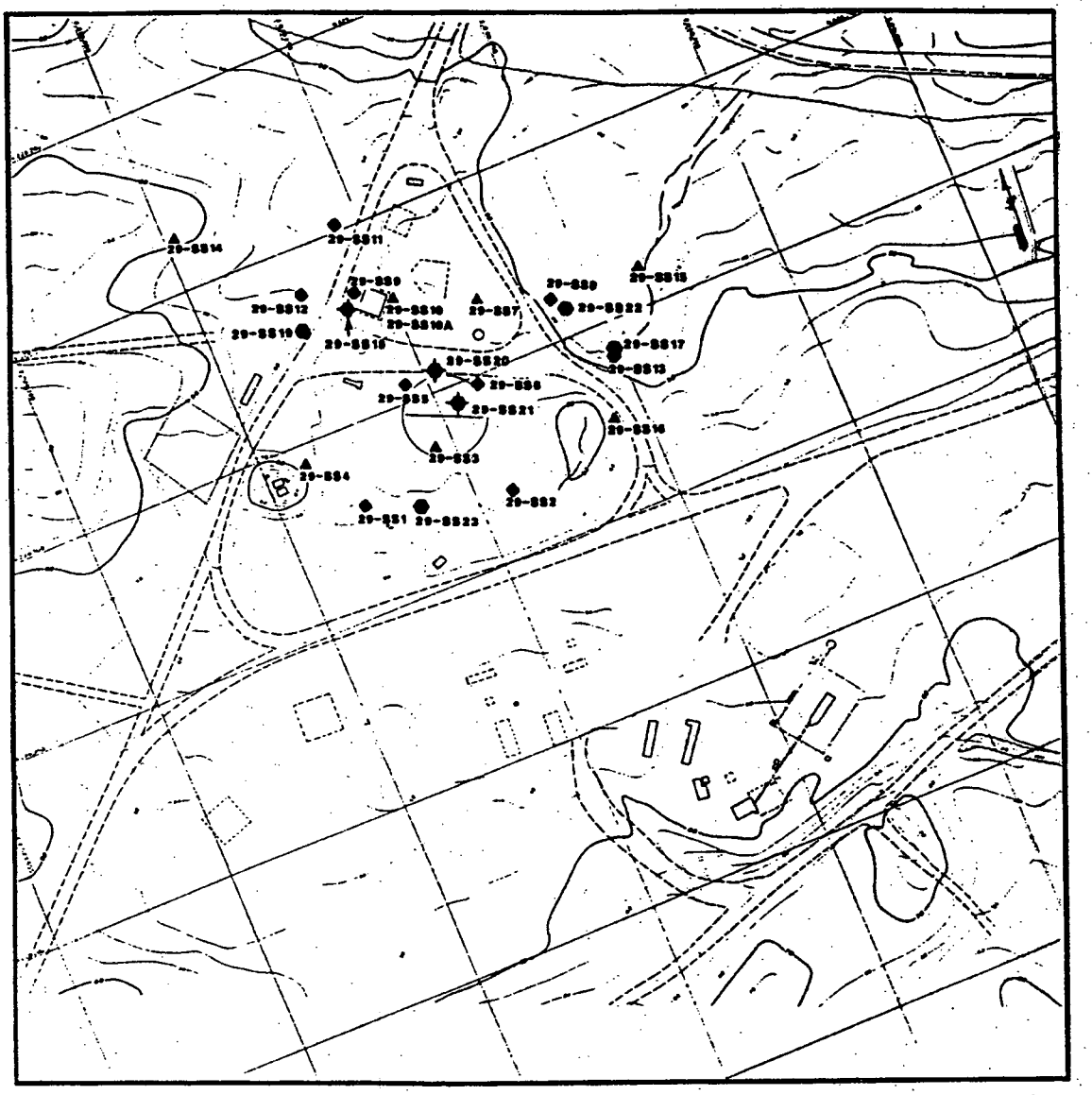
- Seven surface soil samples (29-SS17 to 29-SS23) were collected within the area of known petroleum contamination and analyzed for PCBs. Three of these samples (within or near the circular burn area and concrete burn pad) were also analyzed for dioxins and furans. PCBs were detected in all but one of the seven surface soil samples, with one of the three surface soil samples analyzed for dioxins and furans exhibiting octachlorodibenzo-p-dioxin (OCDD). No furans were detected in the three surface soil samples analyzed for these constituents.

- Four subsurface soils samples were collected at the base of each of the underground runoff containment tanks removed during Phase II activities. All eight samples were analyzed for TPH, four for PCBs, and two for Resource Conservation and Recovery Act (RCRA) waste characteristics. TPH was detected beneath the 5,000-gallon tank, while both TPH and PCBs were identified beneath the 10,000-gallon tank. None of the subsurface soil samples met any of the RCRA waste characteristics.

Quarterly Ground Water Sampling. Ground water monitoring has been conducted at Area 29 subsequent to the Phase I EI (i.e., in December 1991 with quarterly monitoring beginning in May 1993). During each sampling round, ground water samples were collected from each of the five monitoring wells and analyzed for VOCs. Results of this sampling indicate that the VOCs identified at 29-MW2S may occasionally migrate within the perched zone (e.g., to 29-MW3S). While dissolved VOCs have been detected in samples collected from the true water table, their detection has been sporadic and at trace to low levels. Specifically, VOCs were detected for the first time in 29-MW1S in May 1993 (1,2-dichloroethane at 0.001 ppm) and in 29-MW4S and 29-MW5S in August 1993 (at 0.0006 to 0.004 ppm). Furthermore, none of the detections since August 1993, except for the 0.002 ppm detection of chloroform at 29-MW4S in October 1995, have been above Practical Quantitation Levels (PQLs).

III. HIGHLIGHTS OF COMMUNITY PARTICIPATION

A newspaper notification of the availability of the Proposed Plan for Areas 29 and K was published in the Atlantic City Press on Thursday, April 11, 1996. The notice invited the public to comment on the EI/FS and Proposed Plan. The public comment period was held from April 11 through May 10, 1996. The Proposed Plan and EI/FS Reports were placed in the administrative record maintained at the Atlantic County Library.



LEGEND

- ◆ SURFACE SOIL SAMPLE-PETROLEUM HYDROCARBON ANALYSIS (PHASE I)
- ▲ SURFACE SOIL SAMPLE-PRIORITY POLLUTANTS (PHASE I)
- ● PCB ONLY
- ✦ PCB, DIOXIN, FURANS

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FIGURE 5.

PHASE II SURFACE SOIL SAMPLING LOCATIONS

Date: 1/96 | Drawing No. 01040-0010-00220

A public meeting was held on May 2, 1996 at the Atlantic County Library. At the meeting, representatives from the FAA, the FAA's environmental consultant (TRC Environmental Corporation), U.S. Environmental Protection Agency (USEPA), and New Jersey Department of Environmental Protection (NJDEP) were available to answer questions about Areas 29 and K. The attendance list from the meeting is attached (see Appendix B). No comments on the Proposed Plan were received during the public comment period, as noted in the Responsiveness Summary, which follows this Decision Summary.

This decision document presents the selected remedial action alternative for Areas 29 and K of the FAA Technical Center in Atlantic County, New Jersey, chosen in accordance with CERCLA, as amended by SARA and, to the extent practicable, the NCP. The decision for Areas 29 and K is based on the administrative record.

IV. SCOPE AND ROLE OF RESPONSE ACTION

The selected remedy described herein is an Excavation/Removal Action for selected site soils and demolition debris and an Extraction/Treatment Action for on-site perched ground water. In summary, the remedy provides for the excavation and off site disposal of PCB-contaminated soils, TPH-contaminated soils, and demolition debris from the circular burn area and concrete burn pad, and for the extraction, on-site treatment of ground water, and nearby reinjection to the subsurface. It should be noted that Areas 29 and K represent only two of more than 20 areas of potential environmental concern identified at the FAA Technical Center. This document addresses only Areas 29 and K, and is not intended to address the entire FAA Technical Center property. The other areas of concern at the FAA Technical Center will be subject to separate response action decisions.

V. SUMMARY OF SITE CHARACTERISTICS

The EI identified the presence of contaminants in soils and ground water at Areas 29 and K which appears to be mainly attributable to the storage or burning of aviation gasoline and fuels, some potentially containing PCBs.

Surface soils exhibited the presence of PCBs at concentrations ranging from non-detectable to 30 ppm and TPH at concentrations ranging from 6 to 6,200 ppm. Of three surface soil samples analyzed for dioxins and furans, one sample (29-SS18, collected adjacent to the concrete burn pad) exhibited 0.0034 ppm of octachlorodibenzo-p-dioxin (OCDD). Other constituents detected in surface soils which were not detected in associated blank samples include the following:

Methylene chloride	Non-detectable (ND) to 0.043 ppm
Phenol	0.058 to 1.7 ppm
SVOC Tentatively Identified Compounds (TICs)	8.2 to 100.6 ppm
Cadmium	ND to 1.8 ppm
Chromium	2.7 to 15 ppm
Copper	ND to 30.9 ppm
Lead	3.9 to 33 ppm

Mercury	ND to 0.22 ppm
Silver	ND to 3.3 ppm
Zinc	20 to 75 ppm

Sample 29-SS3, collected within the circular burn area, also exhibited benzene at 0.063 ppm, ethyl benzene at 0.5 ppm, isophorone at 1.3 ppm and naphthalene at 0.46 ppm.

PCBs were the only constituents detected in surface soils at levels exceeding non-residential New Jersey soil cleanup criteria. The non-residential soil cleanup criteria for PCBs is 2 ppm.

Subsurface soils exhibited TPH at levels of 2 to 14,000 ppm, with the greatest concentrations detected at the base of the excavated 10,000-gallon underground storage tank. Other constituents detected in subsurface soils which were not detected in the associated blank samples include the following:

Benzene	ND to 0.034 ppm
Ethyl benzene	ND to 0.19 ppm
Phenol	ND to 0.14 ppm
SVOC TICs	2.5 to 68 ppm
PCBs	ND to 24 ppm
Antimony	ND to 12 ppm
Chromium	2.9 to 5.6 ppm
Lead	2.1 to 5.3 ppm
Mercury	ND to 0.0002 ppm
Zinc	6.8 to 11.9 ppm

PCBs and TPH were the only constituents detected in subsurface soils at levels exceeding non-residential New Jersey soil cleanup criteria. The non-residential soil cleanup criteria for PCBs is 2 ppm, while the cleanup criteria for total organic compounds is 10,000 ppm and is exceeded by the maximum detected TPH level of 14,000 ppm.

Based on the identification of PCBs in surface soils and subsurface soils at levels exceeding New Jersey soil cleanup criteria, three areas of soils containing elevated PCBs levels were identified: within the circular burn area, adjacent to the concrete burn pad, and in the former drum storage area (Area K). A total of 350 cubic yards of contaminated soil was estimated to exceed NJDEP cleanup criteria for PCBs. Based on the identification of TPH at a level of 14,000 ppm, which exceeds the New Jersey soil cleanup criteria of 10,000 ppm for total organic compounds, in one of four subsurface soil samples collected at the base of the former 10,000 gallon underground storage tank, a total volume of 50 cubic yards of contaminated subsurface soil was estimated to exceed the NJDEP soil cleanup criteria for total organic compounds. The general locations of these guidance criteria exceedances are indicated in Figure 6.

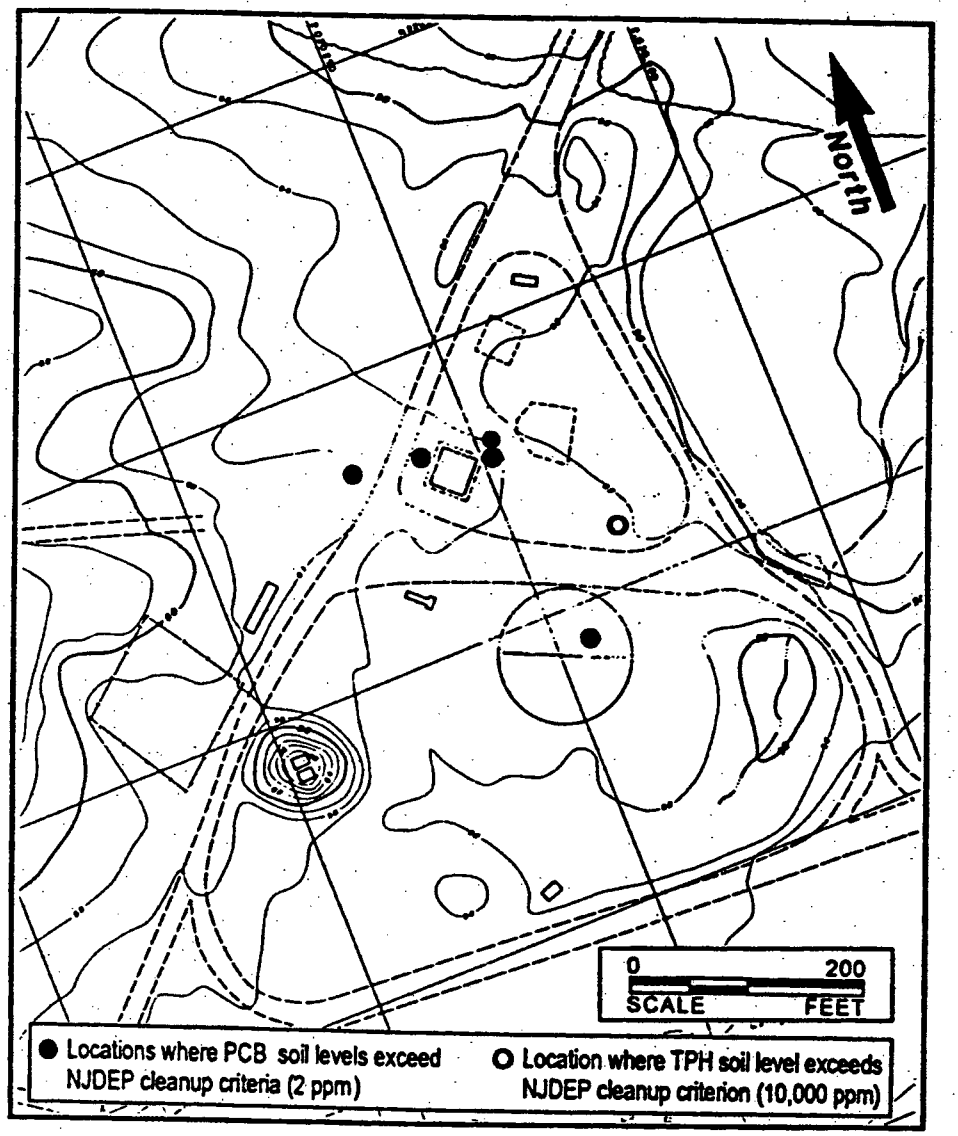

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FIGURE 6. **SOIL CONTAMINATION AREAS**	
Date: 1/96	Drawing No. 01040-0010-00220

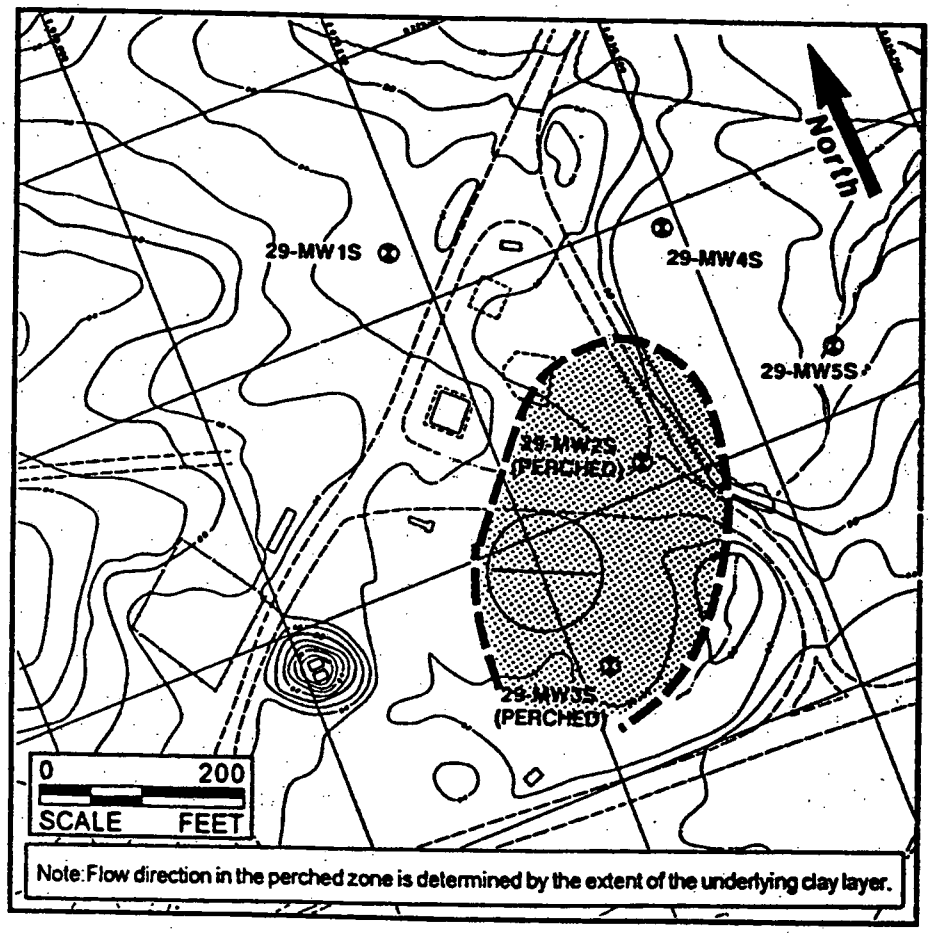
In ground water, priority pollutant VOCs and SVOCs were initially detected in only the perched ground water sample collected from well 29-MW2S (with the exception of bis(2-ethylhexyl)phthalate which was also detected in wells 29-MW1S and 29-MW3S). Inorganics detected in ground water samples include cadmium (ND to 0.006 ppm), chromium (ND to 0.029 ppm), mercury (ND to 0.00031 ppm), lead (ND to 0.0086 ppm) and zinc (0.023 to 0.049 ppm). During some of the quarterly ground water sampling rounds, VOCs were also detected in well 29-MW3S, which is also located in the perched zone. VOCs which were detected in ground water at levels exceeding state or federal Maximum Contaminant Levels (MCLs) or New Jersey Ground Water Quality Standards (i.e., PQLs) in the perched zone include ethylbenzene (detected at 0.95 ppm), methylene chloride (0.056 ppm), toluene (1.9 ppm), 1,1,1-trichloroethane (0.1 ppm), and xylene (2.8 ppm). During the August 1993 quarterly sampling round, VOCs were detected for the first time in 29-MW4S, which is screened in the true water table. The detected concentrations ranged from 0.0009 ppm (toluene and 1,1-dichloroethene) to 0.004 ppm (1,1,1-trichloroethane). The subsequent detection of VOCs in the true water table has been sporadic. 1,1,1-Trichloroethane (at a maximum concentration of 0.004 ppm), chloroform (0.002 ppm) and tetrachloroethane (0.003 ppm) have been detected during only one of ten quarterly sampling rounds and in only one well at levels exceeding MCLs or Ground Water Quality Standards (i.e., PQLs). Based on these results, the primary area of ground water impact is located within the perched water table zone, as indicated in Figure 7.

VI. SUMMARY OF SITE RISKS

A baseline risk assessment was conducted based on the results of the Phase I EI for Areas 29 and K to estimate the potential risks associated with current site conditions under current and potential future land uses. The baseline risk assessment estimates the potential human health and ecological risks which could result from the contamination at the site if no remedial action was taken. A summary of the Human Health Risk Assessment (HHRA) and Environmental Risk Assessment (ERA) is presented below. A more complete description can be found in the Phase I EI/FS Report (TRC, March, 1989) at pages 11-45 through 11-68. The Area 29 Feasibility Study (FS) (TRC, July, 1989) provides a discussion of the potential impacts of the Phase II EI data on the human health and ecological risks estimated in the Phase I HHRA and ERA, respectively. This latter discussion is also summarized as part of this Decision Summary.

A. Human Health Risk Assessment

The HHRA consisted of a four-step process to assess the potential site-related human health risks under both current and potential future exposure scenarios. The four-step process included hazard identification, exposure assessment, toxicity assessment, and risk characterization and is summarized below.



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FAA TECHNICAL CENTER RECORD OF DECISION	
FIGURE 7. **APPROXIMATE EXTENT OF PERCHED GROUND WATER CONTAMINATION**	
Date: 1/96	Drawing No. 01040-0010-00220

Hazard Identification

The hazard identification involved the selection of the constituents of concern (COCs), the detected constituents which have inherent toxic/carcinogenic effects that are likely to pose the greatest concern with respect to the protection of human health. The COCs for Area 29 were chosen based upon the relative toxicity of the detected constituents, the measured concentrations in the site media, and the physical/chemical properties related to the environmental mobility and persistence of each constituent. The COCs selected in the Area 29 HHRA by media included:

- Benzene and PCBs in surface soil,
- PCBs in subsurface soil, and
- Benzene, 1,1-dichloroethane, toluene, and bis(2-ethylhexyl)phthalate in ground water.

Exposure Assessment

The exposure assessment identified the potential pathways and routes for COCs to reach potential receptors and estimated the constituent concentrations at the points of exposure as well as characterized the extent of the potential exposures. Constituent release mechanisms from the environmental media, based on relevant hydrologic and hydrogeologic information (fate and transport, and other pertinent site-specific information) are also presented in the HHRA.

The entire FAA Technical Center is restricted by a fence and security and only government employees have access to the facility, thereby precluding persons under the age of 18. At Area 29, the current receptor population was characterized as limited to government employees due to the size and security of the FAA Technical Center. Under this current government employee scenario, workers were assumed exposed through ingestion of and dermal contact with COCs in surface soils. Currently, the site is not actively used. However, incidental exposure could occur as a result of activities such as atypical work assignments which could require the presence of a person at the site. Exposures to subsurface soils and ground water were not evaluated under this scenario since there is no current use of ground water at Area 29 and no excavations or building projects which would uncover subsurface soils are taking place.

Since the use of Area 29 is not anticipated to change in the foreseeable future, adult government employees were also identified as the future receptor population. Consequently, the potential exposures to surface soils evaluated under the current scenario are also applicable to future government workers at the site (and thus were not reevaluated under the future scenario). Under the future government worker scenario, exposures to subsurface soils, as a result of future excavation and/or construction, and ground water, assuming the installation of an on-site well, were quantified. Future workers were assumed exposed to COCs in subsurface soil through ingestion and dermal contact, and to COCs in ground water through ingestion.

The assumptions used in the HHRA regarding the magnitude, frequency, and duration of exposures to the COCs in surface soils, subsurface soils, and ground water are provided in Table 1.

Two exposure point concentrations (EPCs) were identified for each COC; namely, the arithmetic average concentration and the maximum detected concentration. The average and

TABLE 1
EXPOSURE ASSESSMENT INPUT PARAMETERS
USED IN THE PHASE I AND II HHRAs
AREA 29 - FIRE TRAINING AREA AND
AREA K - STORAGE AREA NEAR AREA 29
FAA TECHNICAL CENTER

	Most Probable Case	Realistic Worst Case
General		
Exposure Point Concentration (mg/kg; mg/l): (a)	Average	Maximum
Body Weight, Adult (kg):	70	70
Current FAA Worker (Surface Soils)		
Ingestion		
Ingestion rate (kg/d):	NC	0.0002
Oral absorption (--):		
Benzene & PCBs	NC	0.5 & 1.0
Exposure Frequency (d/yr):	NC	2
Exposure Duration (yr):	NC	20
Dermal Contact		
Dermal Contact Rate (kg/d):	0.01	0.01
Dermal absorption (--):		
Benzene	0.1 & 0.5	0.1 & 0.5
PCBs	0.02 & 0.04	0.02 & 0.04
Exposure Frequency (d/yr):	12	24
Exposure Duration (yr):	10	20
Future Construction (Subsurface Soils)		
Ingestion		
Ingestion rate (kg/d):	NC	0.0002
Oral absorption (--): (b)	NC	0.5 & 1.0
Exposure Frequency (d/yr):	NC	20
Exposure Duration (yr):	NC	2
Dermal Contact		
Dermal Contact Rate (kg/d):	0.01	0.01
Dermal absorption (--): (b)	0.02 & 0.04	0.02 & 0.04
Exposure Frequency (d/yr):	120	240
Exposure Duration (yr):	1	2
Future Commercial/Industrial (Ground Water)		
Ingestion		
Ingestion rate (l/d):	1	2
Oral absorption (--): (c)	0.5 & 1.0	0.5 & 1.0
Exposure Frequency (d/yr):	250	250
Exposure Duration (yr):	10	20

NC = Not calculated since the realistic worst case risk estimate was below the 1E-06 to 1E-04 cancer risk range or 1.0 non-cancer hazard index

(a) Chemical-specific
(b) For PCBs
(c) For benzene, 1,1-dichloroethane, toluene, and bis(2-ethylhexyl)phthalate

maximum concentrations (and corresponding exposure assumptions) were used to characterize the "most probable" and "realistic worst case" exposures to the identified COCs, respectively.

Toxicity Assessment

The toxicity assessment summarizes the types of adverse health effects associated with exposures to each COC and the relationship between magnitude of exposure (dose) and severity of toxic effect (response). The dose-response values used in the HHRA were obtained from a combination of EPA's Superfund Public Health Evaluation Manual (EPA, 1986), EPA's Office of Research and Development Health Effects Assessments (HEAs) (EPA, 1986), EPA's Environmental Criteria and Assessment Office (EPA, 1985), EPA's Carcinogenic Assessment Group (EPA, 1984), and EPA's Office of Drinking Water (EPA, 1985). The toxicity values used in the HHRA are summarized in Table 2.

For potential carcinogens, risks are estimated as probabilities. Constituent-specific cancer potency factors (CPFs) are estimates of the constituent's carcinogenic potency based upon studies, most often in laboratory animals but occasionally in humans, which test the relationship between the magnitude of exposure and the prevalence of tumors in the exposed population. The CPFs used in the HHRA are presented as the expected cancer risk for a chronic exposure to 1 mg/kg/day of the specific constituent (i.e., risk per unit dose or $(mg/kg/day)^{-1}$), and are estimates of the 95% upper confidence limit (UCL) on the slope of the dose-response curve.

Determining the potential for chronic non-cancer (systemic) effects was based on the use of constituent-specific reference doses (RfDs) or acceptable chronic intake (AIC) values. Chronic RfDs are estimates of the daily, chronic exposure to the population that is likely to be without appreciable risk of deleterious effect. RfD values incorporate numerous safety and/or modifying factors which serve as a conservative downward adjustment of the numerical value. The Area 29 HHRA also incorporated AIC values in the event these values were more health protective (i.e., lower) than the RfDs. For assessing the potential for acute non-cancer effects, the HHRA applied values based on 1-day health advisories (HAs).

Risk Characterization

The risk characterization combines the estimates of exposure with the dose-response (or toxicity) values to derive estimates of the potential cancer risks and the potential for adverse non-cancer health effects. For each exposure pathway and land use evaluated, most probable and reasonable worst case risk estimates were generated for each COC corresponding to exposure to the average and maximum detected concentrations, respectively.

Excess lifetime cancer risks were determined for each COC by multiplying the COC-specific exposure dose by the COC-specific CPF, described above. The resulting cancer risk estimates are expressed in scientific notation as a probability (e.g. 1×10^{-6} for one in a million) and indicate (using this example), that an average individual is likely to have a one in a million chance of developing cancer over a 70 year lifetime. Current EPA practice considers carcinogenic risks to be additive when assessing exposure to a mixture of constituents. That is, the COC-specific cancer risks were summed to estimate pathway-specific cancer risks.

TABLE 2
TOXICITY VALUES USED IN THE PHASE I AND II HHRAs
FAA AREAS 29 AND K
AREA 29 - FIRE TRAINING AREA AND
AREA K - STORAGE AREA NEAR AREA 29
FAA TECHNICAL CENTER

Constituent	Non-Cancer		Cancer Potency Factor (b) (mg/kg/d)-1
	Acute (a) (mg/kg/d)	Chronic (mg/kg/d)	
Benzene	0.023	7.0E-04 (c)	0.052
Dichloroethane, 1,1-	0.1	0.009 (c)	0.58
Toluene	1.8	0.3 (d)	NA
Bis(2-ethylhexyl)phthalate	NA	0.02 (d)	6.8E-04 (e)
PCBs	0.013	3.0E-04 (c)	4.34

(a) 1-Day child health advisories (EPA Office of Drinking Water, 1985) converted to adult
(b) EPA, Office of Resaerch and Development, Health Effects Assessments (1986)
(c) Reference dose (EPA, Environmental Criteria and Assessment Office, 1985)
(d) Chonic acceptable intake (EPA, Superfund Public Health Evaluation Manual, 1986)
(e) EPA Carcinogenic Assessment Group (1984)

Hazard indices (HIs) were also calculated for each pathway as a measure of the potential for non-carcinogenic health effects. The HI is the sum of the constituent-specific hazard quotients (HQs) which are calculated by dividing the exposure dose by the reference dose (RfD) or other suitable benchmark for non-carcinogenic health effects for an individual constituent. In general, HQs are assumed additive for constituents with similar toxic endpoints. In the HHRA, acute and chronic HQs were calculated using the chronic RfDs (or similar benchmark) and 1-day HAs, respectively.

The estimated cancer risks and non-cancer HIs (Table 3) were evaluated using EPA's established target risk range for Superfund cleanups (i.e, cancer risk range of 10^{-6} to 10^{-4}) and target HI value (i.e., HI less than or equal to 1).

The results of the HHRA indicate that the presence of benzene and PCBs in surface soil and PCBs in subsurface soil do not pose an unacceptable human health risk. That is, estimated cancer risks and non-cancer HIs were below the target values (i.e., 10^{-6} to 10^{-4} and 1.0, respectively). The cancer risks associated with future exposures to ground water were estimated to exceed the target cancer risk range of 10^{-6} to 10^{-4} under the realistic worst case (based on the maximum detected concentrations), and to fall within this range under the most probable case (based on the average concentrations). The elevation under the realistic worst case was primarily due to the presence of benzene and 1,1-dichloroethane which had individual cancer risks of 3.2×10^{-4} and 8.4×10^{-4}, respectively. The estimated non-cancer HIs for ingestion of ground water ranged from 1.5 (acute) to 9.3 (chronic) under the realistic worst case, but were less than 1.0 under the most probable case. Benzene was the main contributor to the estimated non-cancer HIs.

While not included in the quantitative assessment of site risks, the presence of TPH in site surface soils was evaluated qualitatively. It was concluded that minimal risk would be associated with direct contact with TPH-contaminated surface soils.

Implications of the Phase II EI on the Phase I HHRA

A discussion of the implications of the Phase II EI on the Phase I HHRA results is provided in the FS for Area 29 (TRC, July, 1989) at pages 1-20 through 1-29 and is summarized below.

PCBs and octachlorodibenzo-*p*-dioxin (OCDD) were the constituents detected in Phase II surface soil samples. While PCBs were also detected in Phase I, dioxins and furans were not included as Phase I analytes. Consequently, OCDD was evaluated with regard to inclusion as a COC on the basis of the Phase II EI. Due to OCDD's low toxicity, it was determined not to be of environmental concern and was not selected as a COC for Areas 29 and K. Therefore, no additional COCs were identified on the basis of the Phase II EI.

The risk results calculated on the basis of the Phase I and II data combined (Table 4) are consistent with those obtained in Phase I. That is, the inclusion of the Phase II PCB data does not change the Phase I conclusion that the COCs in surface and subsurface soils do not pose an unacceptable human health risk.

TABLE 3
SUMMARY OF ESTIMATED HUMAN HEALTH RISKS
BASED ON PHASE I DATA
AREA 29 - FIRE TRAINING AREA AND
AREA K - STORAGE AREA NEAR AREA 29
FAA TECHNICAL CENTER

	Cancer Risk		Non-Cancer Hazard Index	
	Most Probable Case	Realistic Worst Case	Most Probable Case Acute/Chronic	Realistic Worst Case Acute/Chronic
Current FAA Worker (Surface Soils):				
Ingestion	NC	9.3E-08	NC/NC	1.1E-03/7.2E-05
Dermal Contact	4.9E-08	2.2E-06 (a)	NC/NC	2.4E-03/1.8E-03
Future Construction (Subsurface Soils):				
Ingestion	NC	4.7E-07	NC/NC	5.5E-03/1.3E-02
Dermal Contact	7.0E-07	1.1E-05 (a)	NC/NC	1.1E-02/3.0E-01
Future Commercial/Industrial (Ground Water):				
Ingestion	5.8E-5 (b)	1.2E-03 (b)	1.5E-01/9.3E-01	1.5E-00/9.3E+00 (c)

[ ] = Within 1E-06 to 1E-04 cancer risk range

[ ] = Exceeds 1E-06 to 1E-04 cancer risk range or 1.0 non-cancer hazard index

NC = Not calculated since the realistic worst case estimate was below the 1E-06 to 1E-04 cancer risk range or 1.0 non-cancer hazard index

(a) Attributable to PCBs
(b) Primarily attributable to benzene and 1,1-dichloroethane
(c) Primarily attributable to benzene

TABLE 4
SUMMARY OF ESTIMATED HUMAN HEALTH RISKS
BASED ON PHASE I AND II DATA (a)
AREA 29 - FIRE TRAINING AREA AND
AREA K - STORAGE AREA NEAR AREA 29
FAA TECHNICAL CENTER

	Cancer Risk		Non-Cancer Hazard Index	
	Most Probable Case	Realistic Worst Case	Most Probable Case Acute/Chronic	Realistic Worst Case Acute/Chronic
Current FAA Worker (Surface Soils):				
Ingestion	NC	5.8E-07	NC/NC	6.9E-03/4.5E-04
Dermal Contact	4.0E-07	1.4E-05 (b)	NC/NC	1.4E-02/1.1E-02
Future Construction (Subsurface Soils):				
Ingestion	NC	4.7E-07	NC/NC	5.5E-03/1.3E-02
Dermal Contact	3.8E-07	1.1E-05 (b)	NC/NC	1.1E-02/3.0E-01
Future Commercial/Industrial (Ground Water):				
Ingestion	5.8E-5 (c)	1.2E-03 (c)	1.5E-01/9.3E-01	1.5E-00/9.3E+00 (d)

[ ] = Within 1E-06 to 1E-04 cancer risk range

[ ] = Exceeds 1E-06 to 1E-04 cancer risk range or 1.0 non-cancer hazard index

NC = Not calculated since the realistic worst case estimate was below the 1E-06 to 1E-04 cancer risk range or 1.0 non-cancer hazard index

(a) Note that the Phase II investigation was limited to the analysis of surface soil samples for dioxin and furans and PCBs and subsurface soil samples for PCBs. No additional ground water data were obtained.
(b) Attributable to PCBs
(c) Primarily attributable to benzene and 1,1-dichloroethane
(d) Primarily attributable to benzene

B. Environmental Risk Assessment

A qualitative environmental risk assessment was conducted on the basis of the same COCs as the HHRA. Since PCBs are persistent in the environment, tend to bioaccumulate, and can cause reproductive and behavioral changes in animals, it was surmised that concentrations of PCBs in surface soils may be high enough to affect the reproduction and behavior of some wildlife. Currently, a comprehensive ecological risk evaluation of the entire FAA Technical Center facility is being conducted which will further define ecological risks associated with Area 29 and other portions of the facility.

Actual or threatened releases of hazardous substances from this site, if not addressed by implementing the response action selected in this ROD, may present an imminent and substantial endangerment to public health, welfare, or the environment.

VII. REMEDIAL ACTION OBJECTIVES

Remedial action objectives are specific goals to protect human health and the environment; they specify the COCs, the exposure route(s), receptor(s), and acceptable contaminant level(s) for each exposure route. These objectives are based on available information and standards such as ARARs and risk-based levels established in the risk assessment.

A FS serves as the mechanism for the development, screening, and detailed evaluation of remedial alternatives for all environmental media affected at a site. The FS for Areas 29 and K was completed by TRC in July 1989 and established the objectives for remedial actions at Areas 29 and K. Due to changes in ARARs which have occurred since the time the FS was prepared, the objectives have been revised accordingly. The following remedial action objectives have been established for Areas 29 and K:

- Eliminate exposures to PCB-contaminated soils at levels which exceed state or federal cleanup criteria;
- Reduce concentrations of TPH in subsurface soils to prevent continued leaching of contaminants into ground water;
- Prevent the migration of VOCs in perched ground water to deeper aquifer systems;
- Reduce contaminant concentrations in the perched ground water system to acceptable levels; and
- Reduce human health risks posed by the site in accordance with state and federal remediation goals.

VIII. DESCRIPTION OF THE ALTERNATIVES

The Area 29 FS (TRC, July, 1989) included 12 remedial alternatives formulated for addressing soil and perched ground water remediation at Areas 29 and K. An initial screening of the twelve alternatives was conducted in the FS based on acceptable engineering practice, effectiveness, and cost. On the basis of the initial screening, this list was reduced to six alternatives which were considered to provide the greatest degree of compliance with the screening criteria. An additional alternative (Alternative 2 - RCRA Capping of Contaminated Soil) was removed from further consideration subsequent to the FS (as described in the Proposed Plan) based on the issuance of the New Jersey soil cleanup criteria which eliminated the need for remediation of surficial TPH-contaminated soil.

The remaining five alternatives are referred to as Alternatives 1, 3, 4, 10, and 12. Included among these alternatives is the no action alternative (Alternative 1), a required consideration for every FS. The five alternatives are summarized below. Because a number of the alternatives involve common remedial elements, these are described first and then are referenced in the subsequent individual alternative descriptions, as appropriate.

Common Major Elements of Remedial Alternatives

PCB-Contaminated Soil Excavation and Off Site Disposal

For each of the alternatives except the no action alternative (Alternative 1), the PCB-contaminated soils in three areas (within the circular burn area, adjacent to the concrete burn pad, and in the former drum storage area of Area K) will be excavated and disposed of off site at licensed landfill facilities permitted to accept soils containing chemicals at the levels detected. The soils exceeding the NJDEP cleanup criteria of 2 ppm, estimated to be approximately 350 cubic yards in volume, will be excavated for off site disposal. The remediation of the PCB-contaminated soils includes landfill disposal of PCB-contaminated soils which are not characteristically hazardous by RCRA definition and which do not exceed a total halogenated organic compound level of 1,000 ppm. Based on existing data, all PCB-contaminated soils at Area 29 are not expected to exceed land disposal restrictions. Prior to off site disposal, sampling and analysis to characterize the excavated soils will be performed. In association with the soil excavation activities, the circular burn area and concrete burn pad will be demolished and the demolition debris will also be further characterized for off site disposal. Disposal of these materials will be performed in accordance with RCRA and Toxic Substance Control Act (TSCA) regulations which address the handling and disposal of PCB-contaminated materials, as well as with state and local regulations.

TPH-Contaminated Soil Excavation and Off Site Disposal

For each of the alternatives except the no action alternative (Alternative 1), the TPH-contaminated soils at the former 10,000-gallon underground storage tank location will be excavated and disposed of off site at licensed landfill facilities permitted to accept soils containing chemicals at the levels detected. The soils exceeding the NJDEP cleanup criteria of 10,000 ppm for total organic compounds, estimated to be approximately 50 cubic yards in volume, will be excavated for off site disposal. Prior to off site disposal, sampling and analysis to characterize the excavated soils will be performed. Disposal of these soils will be conducted in accordance with RCRA and NJDEP industrial waste disposal regulations.

Declaration of Environmental Restrictions

New Jersey non-residential soil cleanup criteria will be attained by the remedial alternatives (except for Alternative 1, the no action alternative). Although not required by EPA, the FAA will install an institutional control in order to prevent unacceptable exposures from occurring under future site use. A Declaration of Environmental Restrictions will be placed on the land records for the portions of Areas 29 and K containing constituents of concern in soil above the New Jersey residential soil cleanup criteria.

Ground Water Extraction/Treatment

Ground water extraction and treatment systems are included as components for two of the remedial alternatives (Alternatives 3 and 4). Perched ground water will be extracted for subsequent treatment. The remedial alternatives and costs presented herein are based on perched ground water extraction and treatment only. For the purpose of estimating relative costs, ground water is assumed to be extracted for treatment at a rate of five gallons per minute. Following treatment, the ground water will be reinjected back into the subsurface.

Ground water cleanup criteria will include federal and state MCLs and New Jersey Ground Water Quality Standards. Pursuant to NJAC 7:9-6.5(d)(2), ground water at the FAA Technical Center is classified as Class I-PL (Protection Area). Pursuant to NJAC 7:9-6.7(d)(2), the ground water quality criteria for Class I-PL (Protection Area) shall be background water quality, as that term is defined in NJAC 79-6.4. The NJDEP and Pinelands Commission recognize that technical limitations exist for measuring compliance with such criteria. The seven constituents identified below have either not been detected in background ground water at the FAA Technical Center or have been detected at concentrations which are lower than the relevant PQL, as that term is defined in NJAC 7:9-6.4, for each constituent. The background water quality for each of these constituents is, therefore, lower than the relevant PQL for each.

Pursuant to NJAC 7:9-6.9(c), where a constituent standard is of a lower concentration than the relevant PQL, NJDEP shall not consider a discharge to be causing a contravention of the New Jersey Ground Water Quality Standards for that constituent so long as the concentration of the constituent in the affected ground water is less than the relevant PQL for the constituent. The relevant PQLs for each of the seven constituents in ground water of concern at the FAA Technical Center are as follows:

Constituent	PQL (ppm)
Benzene	0.001
Ethylbenzene	0.005
Methylene Chloride	0.002
Tetrachloroethene	0.001
Toluene	0.005
1,1,1-Trichloroethane	0.001
Xylene	0.002

Ground Water In Situ Treatment

In situ treatment of ground water is included as part of two of the alternatives (Alternatives 10 and 12). This treatment does not involve the extraction and subsequent reinjection of ground water. Similar to the ground water extraction/treatment components above, the remedial alternatives and costs presented herein are based on perched ground water treatment only.

A brief description of the five remedial alternatives is presented below.

Alternative 1 - No Action

Capital Cost: $7,000
O & M Cost: $332,000
Present Worth Cost: $408,000
Construction Time: 1 month

This alternative involves no additional actions other than installation of two additional monitoring wells and continued ground water monitoring. No contaminants would be treated or contained and existing health and environmental risks would remain.

Alternative 3 - Ground Water Extraction with Air Stripping

Capital Cost: $404,000
O & M Cost: $195,000
Present Worth Cost: $719,000
Construction Time: 6 months

This alternative involves the removal and off-site disposal of PCB-contaminated soils, petroleum hydrocarbon-contaminated soils and demolition debris. Perched ground water contamination is addressed through extraction and air stripping for treatment of VOCs.

Alternative 4 - Ground Water Extraction with Carbon Adsorption

Capital Cost: $401,000
O & M Cost: $201,000
Present Worth Cost: $723,000
Construction Time: 6 months

This alternative involves the removal and off-site disposal of PCB-contaminated soils, petroleum hydrocarbon-contaminated soils and demolition debris Perched ground water would be extracted and treated using carbon adsorption, with both VOC and SVOC contamination in ground water addressed.

Alternative 10 - In Situ Aeration of Contaminated Ground Water and Vacuum Extraction

Capital Cost: $398,000
O & M Cost: $313,000
Present Worth Cost: $854,000
Construction Time: 8 months

This alternative involves a combination of in situ aeration and vacuum extraction. In situ ground water treatment is treatment which is conducted in-place, with no extraction of the ground water prior to treatment. Aeration wells are used to aerate the perched ground water in situ, stripping volatile contaminants from the ground water into the soil pore spaces. The vacuum extraction system subsequently extracts the gas from the soil pore spaces for discharge or treatment. It would be combined with removal and off-site disposal of PCB-contaminated soils, petroleum hydrocarbon-contaminated soils, and demolition debris.

Alternative 12 - In Situ Biodegradation

Capital Cost: $441,000
O & M Cost: $201,000
Present Worth Cost: $770,000
Construction Time: 8 months

This alternative involves ground water treatment using in situ biodegradation. Perched ground water remediation would be achieved by installing wells for nitrate addition, which would enhance subsequent anaerobic degradation of ground water contaminants in-place, without ground water extraction. It would be combined with removal and off-site disposal of PCB-contaminated soils, petroleum hydrocarbon-contaminated soils, and demolition debris.

IX. SUMMARY OF COMPARATIVE ANALYSIS OF ALTERNATIVES

The five alternatives identified in Section VIII were initially evaluated on the basis of technical effectiveness and feasibility, public health and environmental effects, institutional issues, and costs as presented in the Feasibility Study. Subsequently, these alternatives were also evaluated using the criteria derived from the National Contingency Plan (NCP) and the Superfund Amendment and Reauthorization Act of 1986 (SARA), as presented in the Proposed Plan. These criteria relate to the SARA amendment to Section 121 of CERCLA [Section 121 (b)(1)] as Section 300.430(e)(9)(iii) of the NCP and are as follows:

- Overall protection of human health and the environment addresses whether or not a remedy provides adequate protection and describes how risks posed through each pathway are eliminated, reduced, or controlled through treatment, engineering controls, or institutional controls.

- Compliance with applicable or relevant and appropriate requirements (ARARs) addresses whether or not a remedy will meet all of the applicable or relevant and appropriate requirements of other federal and state environmental statutes and requirements or provide grounds for invoking a waiver.

- Long-term effectiveness and permanence refers to the ability of a remedy to maintain reliable protection of human health and the environment over time, once cleanup goals have been met and determines the magnitude of residual risk posed by untreated wastes or treatment residuals.

- Reduction of toxicity, mobility, or volume through treatment is the anticipated performance of the treatment technologies a remedy may employ.

- Short-term effectiveness addresses the period of time needed to achieve protection and any adverse impacts on human health and the environment that may be posed during the construction and implementation period until cleanup goals are achieved.

- Implementability is the technical and administrative feasibility of a remedy, including the availability of materials and services needed to implement a particular option.

- Cost includes estimated capital and operational and maintenance costs, and net present worth costs.

- State acceptance indicates whether, based on its review of the EI/FS reports and the Proposed Plan, the State concurs, opposes, or has no comment on the preferred alternative at the present time.

- Community acceptance evaluates the issues and concerns the public usually have regarding the alternatives.

The following presents a comparative analysis of the five alternatives based upon the evaluation criteria noted above.

Overall Protection of Human Health and the Environment - Alternative 4 provides the greatest overall protection of human health and the environment through its ability to treat both volatile and semi-volatile organic compounds dissolved in ground water, its removal and off-site disposal of PCB-contaminated soils and petroleum hydrocarbon-contaminated soils, and its proven reliability and effectiveness. Alternative 3 also offers a high degree of overall protection through the removal and off-site disposal of PCB-contaminated soils and petroleum hydrocarbon-contaminated soils and treatment of ground water, although it would not be as effective in the treatment of semi-volatile organic ground water contaminants. Alternatives 10 and 12 would provide some protection of human health and the environment since they also include removal and off-site disposal of PCB-contaminated soils and petroleum hydrocarbon-contaminated soils, but due to the innovative nature of their ground water treatment technologies, their reliability and capability in attaining ARARs are not as well-defined as Alternatives 3 and 4. Alternative 1, which provides no soil or ground water treatment, is the least protective alternative.

Compliance with ARARs - Each of the remedial alternatives except for Alternative 1 will comply with chemical-specific to-be-considered criteria (TBCs) applicable to PCB-contaminated soils and petroleum hydrocarbon-contaminated soils. Soil characterization, handling, transport and disposal will be conducted in accordance with applicable federal and state waste management regulations. Chemical-specific ARARs applicable to ground water are considered to be achievable for Alternatives 3 and 4. Alternatives 3 and 4 would also be designed to comply with ARARs applicable to the operation of the ground water extraction, treatment and discharge systems. Due to the more innovative nature of Alternatives 10 and 12, a greater degree of uncertainty is associated with the ability of these alternatives to achieve chemical-specific ground water ARARs, although Alternatives 10 and 12 would also be designed and operated in accordance with action-specific ARARs. Alternative 1 will not meet chemical-specific ARARs or TBCs for soil or ground water.

Long-Term Effectiveness and Permanence - Alternatives 3, 4, 10 and 12 will all be effective in the long-term in addressing soils contaminated with PCBs or petroleum hydrocarbons. Alternatives 3 and 4 will also be effective in the long-term in treating ground water contamination. Alternatives 10 and 12 may not be as effective in the long-term due to uncertainties associated with innovative and in situ treatment technologies. Alternative 1 provides no treatment of ground water and is not considered to be effective in the long-term.

Reduction of Toxicity, Mobility, or Volume through Treatment - Each of Alternatives 3, 4, 10 and 12 provide a reduction in ground water toxicity through treatment and a reduction in the mobility of soil contaminants through the containment features of an off-site landfill. Alternative 4 provides the greatest reduction in toxicity by treating both volatile and semi-volatile organic compounds dissolved in ground water. Alternative 3 would be successful in reducing the volume of ground water contaminated with VOCs. Alternatives 10 and 12 would also provide some reduction in ground water contaminant toxicity and mobility. Alternative 1 provides no treatment of VOCs in the ground water.

Short-Term Effectiveness - Alternatives 3 and 4 offer the greatest short-term effectiveness due to the ease and speed with which they could be implemented. Alternatives 10 and 12 require a greater implementation period and could require a greater operational period due to their in situ treatment methods. Alternative 1 involves minimal short-term effects but would not achieve remedial goals.

Implementability - Alternative 1 offers the greatest implementability followed by Alternatives 3 and 4, which involve conventional technologies with proven reliability and performance. Alternatives 10 and 12 are implementable but, due to their more innovative nature, their reliability and performance are not well-documented and the availability of equipment and services may be limited.

Cost - The total estimated costs of the four alternatives which include active remediation fall within a range of less than $150,000. The No Action alternative, Alternative 1, which includes long-term ground water monitoring is the lowest cost alternative. Alternatives 3 and 4 are next in cost, with very comparable total costs. Each of these two alternatives utilizes more conventional technologies and, therefore, is less sensitive to potential variations in assumed technology costs. The remaining alternatives in order of increasing cost are Alternative 12 and Alternative 10, both innovative alternatives which may be sensitive to cost variations.

State Acceptance - The preferred alternative, as discussed in the following section, is acceptable to the NJDEP (see NJDEP letter of concurrence, Appendix A.

Community Acceptance - Community acceptance of the preferred alternative has been evaluated on the basis of public comments, as is described in the Responsiveness Summary of this ROD.

X. SELECTED REMEDY

The following section describes in detail the remedial action which the FAA, in concurrence with EPA, has selected to implement at Areas 29 and K. The selected remedial alternative for Areas 29 and K at the FAA Technical Center is Alternative 4, Ground Water Extraction and Carbon Adsorption, and Excavation and Off Site Disposal of Soils Contaminated with PCBs and/or TPH, as presented in the Proposed Plan. Because of the design's preliminary nature, changes could be implemented during the final design and construction processes to address unforeseen conditions and more cost-effective remedial technologies for ground water extraction, treatment and recharge. Such changes will reflect modifications resulting from the engineering design process and will not substantially change the intent of the selected alternative described herein.

PCB-contaminated soils which exceed the NJDEP non-residential cleanup criterion of 2 ppm will be excavated and disposed of off site at a landfill licensed and permitted to handle the waste. The main areas of excavation will be within the circular burn area, adjacent to the concrete burn pad, and in the former drum storage area (Area K). The volume of soil requiring excavation is estimated to be approximately 350 cubic yards. Based on existing data, the chemical concentrations in the excavated soils are not expected to exceed land disposal restrictions. Prior to off site disposal, remedial sampling and analysis to further characterize the excavated surface soils will be performed. In association with the soil excavation activities, the circular burn area and concrete burn pad will be demolished and the demolition debris will also be further characterized for off site disposal. Disposal of these materials will be performed in accordance with RCRA regulations and Toxic Substances Control Act (TSCA) regulations which address the remediation of PCB-contaminated materials, as well as with state and local regulations.

The TPH-contaminated soils beneath the former 10,000-gallon underground storage tank location will be excavated and disposed of off site at a landfill licensed and permitted to handle the waste. The soils exceeding the NJDEP total organic compound cleanup criteria of 10,000 ppm, estimated to be approximately 50 cubic yards in volume, will be excavated for off site disposal. Prior to off site disposal, remedial sampling and analysis to further characterize the excavated soils will be performed. Disposal of these soils will be performed in accordance with RCRA and NJDEP industrial waste disposal regulations.

Perched ground water will be extracted and treated using carbon adsorption. Pre-treatment of water to remove iron and other metals or sequestration may be employed to minimize fouling of carbon beds and the reinjection system. Other dissolved VOC treatment technologies may be employed as a substitute for carbon adsorption, as long as they meet or exceed the treatment efficiency of carbon adsorption. Treated ground water will be reinjected back into the subsurface.

Although not required by EPA, the FAA will establish a Declaration of Environmental Restrictions where constituents of concern in soil exceed the New Jersey residential soil cleanup criteria, to prevent further development of the site for residential use.

XI. STATUTORY DETERMINATIONS

Under Section 121 of CERCLA and Section 300.430(f) of the NCP, selected remedies must meet certain statutory and regulatory requirements. These requirements and a description of how the selected remedy satisfies each requirement are presented below.

Protection of Human Health and the Environment

The preferred alternative provides the greatest overall protection of human health and the environment by providing remediation of soil contaminants and treatment of both VOCs and SVOCs in perched ground water. It is effective in the short term, with only minimal risks associated with its installation and operation. It also utilizes a proven treatment technology which is readily implemented, and its long-term effectiveness and permanence are expected to be good.

Compliance with ARARs

The selected remedy will attain federal ARARs and those New Jersey ARARs which are more stringent than federal ARARs for ground water, as well as TBCs for soil quality. A summary of applicable chemical-specific, location-specific and action-specific ARARs and TBCs is presented by media in Table 5. Table 6 presents numerical chemical-specific ARAR and TBC values.

The selected remedy is expected to achieve compliance with NJDEP's non-residential soil cleanup standards for PCBs (2 ppm) and total organic compounds (including TPH) (10,000 ppm) through the excavation and off site disposal of any soils exceeding these standards. ARARs for ground water (the most stringent of state or federal MCLs and New Jersey Ground Water Quality Standards) will be achieved through the extraction of perched ground water and subsequent treatment through carbon adsorption.

The regulations established under RCRA, the Hazardous Materials Transportation Act, TSCA, the New Jersey Hazardous Waste Regulations, the New Jersey Hazardous Discharge Site Remediation Requirements, and the New Jersey Pollutant Discharge Elimination System will apply to the implementation of this alternative. Compliance with the Pinelands Protection Act, including the Pinelands Comprehensive Management Plan, a TBC, will be required due to the facility's location within the Pinelands.

Cost-Effectiveness

The selected remedy is comparable in cost to the other alternatives which provide remediation of the contaminated soils and the treatment of perched ground water. The alternatives are similar in their handling of contaminated soils but vary in their means of ground water treatment. The ground water treatment component of Alternative 4 provides treatment of both VOCs and SVOCs while utilizing a proven treatment technology. Therefore, it provides the greatest overall cost-effectiveness of the alternatives considered.

TABLE 5

APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS (ARARs)
AND TO-BE-CONSIDERED CRITERIA (TBCs)
AREA 29 - FIRE TRAINING AREA AND
AREA K - STORAGE AREA NEAR AREA 29
FAA TECHNICAL CENTER

CHEMICAL-SPECIFIC ARARS (Also see Table 6)

- Safe Drinking Water Act
  Maximum Contaminant Levels (MCLs) [40 CFR 141.11-.16, and 141.60 - .63]
  Federal maximum permissible contaminant levels allowable for public water systems; applicable to the remediation of ground water

- NJ Safe Drinking Water Act
  NJ Maximum Contaminant Levels [NJAC 7:10 5.1-5.3]
  State maximum permissible contaminant levels allowable for public water systems; applicable to the remediation of ground water

- NJ Water Pollution Control Act
  NJ Ground Water Quality Standards [NJAC 7:9-6.7(c)]
  State-designated levels of constituents which, when not exceeded, will not prohibit or significantly impair a designated use of water. Pursuant to NJAC 7:9-6.5(d)(2), ground water at the FAA Technical Center is classified as Class I-PL (Protection Area). Pursuant to NJAC 7:9-6.7(d)(2), the ground water quality criteria for Class I-PL (Protection Area) shall be background water quality, as that term is defined in NJAC 7:9-6.4. The NJDEP and Pinelands Commission recognize that technical limitations exist for measuring compliance with such criteria. The seven constituents listed in Table 6 have either not been detected in background ground water at the FAA Technical Center or have been detected at concentrations which are lower than the relevant practical quantitation level (PQL), as that term is identified in NJAC 7:9-6.4, for each constituent. The background water quality for each of these constituents is, therefore, lower than the relevant PQL. Pursuant to NJAC 7:9-6.9(c), where a constituent standard is of a lower concentration than the relevant PQL, NJDEP shall not consider a discharge to be causing a contravention of the New Jersey Ground Water Quality Standards for that constituent so long as the concentration of the constituent in the affected ground water is less than the relevant PQL for the constituent. The relevant PQLs for each of the seven constituents in ground water of concern at Areas 29 and K of the FAA Technical Center are listed in Table 6.

TABLE 5 (Continued)

APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS (ARARs)
AND TO-BE-CONSIDERED CRITERIA (TBCs)
AREA 29 - FIRE TRAINING AREA AND
AREA K - STORAGE AREA NEAR AREA 29
FAA TECHNICAL CENTER

CHEMICAL-SPECIFIC TBCs

- NJ Soil Cleanup Criteria
  Non-promulgated criteria used to determine the potential need for soil remediation

LOCATION-SPECIFIC ARARS

- Safe Drinking Water Act
  Protection of Ground Water Use for Potable Water Supply [40 CFR 149]
  Protects aquifers designated as sole source aquifers from actions by federally-funded programs

LOCATION-SPECFIC TBCs

- Pinelands Comprehensive Management Plan (NJAC 7:50)
  Establishes standards and requirements pursuant to the Pinelands Protection Act designed to promote orderly development of the Pinelands so as to preserve and protect the resources of the Pinelands, including wetland, ground water and air resources, among others.

ACTION-SPECIFIC ARARS

- NJ Water Pollution Control Act
  NJPDES Permit/Discharge Requirements [NJAC 7:14A-2.1]
  State standards for discharges to ground water

- NJ Water Supply Management Act
  General Water Supply Management Regulations [NJAC 7:19-1.4, 1.5, 1.6(b) and 2.2]
  Well Drilling Permits [NJSA 58:4A-14]
  Well Certification Forms [NJAC 7:8-3.11]
  State regulations governing the extraction of ground water at a rate which exceeds 100,000 gallons per day and the drilling and construction of new wells; applicable should the extraction rate of the ground water extraction system exceed 100,000 gallons per day and applicable to the installation of ground water extraction wells

- Toxic Substances Control Act
  Requirements for PCB Spill Cleanup [40 CFR 761.125]
  Establishes requirements for the removal and disposal of PCB-contaminated materials.

TABLE 5 (Continued)

APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS (ARARs)
AND TO-BE-CONSIDERED CRITERIA (TBCs)
AREA 29 - FIRE TRAINING AREA AND
AREA K - STORAGE AREA NEAR AREA 29
FAA TECHNICAL CENTER

- Resource Conservation and Recovery Act (RCRA)
  Identification and Listing of Hazardous Waste [40 CFR 261]
  Waste classification procedures applicable to the characterization of excavated soils and spent carbon

- RCRA
  Standards Applicable to Generators of Hazardous Waste [40 CFR 262]
  Requirements for manifesting, marking and reporting applicable to generators of hazardous waste; applicable if wastes shipped off site are determined to be hazardous

- RCRA
  Standards Applicable to Transporters of Hazardous Waste [40 CFR 263]

- Hazardous Materials Transportation Act
  Rules for Transportation of Hazardous Materials [49 CFR 171 through 179]
  Procedures for off site shipment of hazardous materials or wastes; applicable if wastes shipped off site are determined to be hazardous

- NJ Solid Waste Management Act
  NJ Hazardous Waste Regulations [NJAC 7:26-8.5]
  Waste classification procedures applicable to the characterization of excavated soils and spent carbon

TABLE 6

CHEMICAL-SPECIFIC ARARS AND TBCS

AREA 29 - FIRE TRAINING AREA AND
AREA K - STORAGE AREA NEAR AREA 29
FAA TECHNICAL CENTER

Ground Water Parameter	Federal ARARS (ppb)	State ARARS (ppb)	
	MCL (1)	NJMCL (2)	GWQS (3) PQL
Benzene	5	1	[1]
Ethylbenzene	700		[5]
Methylene Chloride		2	[2]
Toluene	1,000		[5]
Xylene (total)	10,000	44	[2]
Tetrachloroethene	5	1	[1]
1,1,1-Trichloroethane	200	26	[1]

Soil Parameter	State TBCs (ppm) Non-Residential Soil Cleanup Criterion (4)
PCBs	2
Total Organics	10,000

(1) MCL - Maximum Contaminant Level. National Primary Drinking Water Regulations, Final Rule

(2) Maximum Contaminant Level for Drinking Water; NJ Safe Drinking Water Act, NJAC 7:10-16.7

(3) Ground Water Quality Standards; based on Class I-PL (Protection Area, ground water quality criteria shall be the background ground water quality. As discussed in the associated text, when the background water quality is lower than the Practical Quantitation Level (PQL), a discharge will not contravene the standard so long as the concentration of the constituent is less than the relevant PQL.

(4) Compliance with the PCB soil cleanup criterion is determined based on compliance averaging procedures as described in NJDEP Site Remediation News, Spring 1995, Volume 7, No. 2; compliance averaging is not applicable to the total organic soil cleanup criterion.

Utilization of Permanent Solutions and Alternative Treatment Technologies

The FAA, in cooperation with EPA, has determined that the selected remedy utilizes permanent solutions and treatment technologies to the maximum extent practicable. This determination was made based on the comparative evaluation of alternatives with respect to long-term effectiveness and permanence, reduction of toxicity, mobility, or volume through treatment, short-term effectiveness, implementability, and cost, as well as the statutory preference for treatment as a principal element and state and community acceptance.

The main difference between the alternatives is related to the ground water treatment technology utilized. Alternative 4 provides for permanent treatment of the ground water contaminants through extraction and treatment utilizing carbon adsorption. The contaminants are permanently removed from the ground water and transferred to the carbon media for subsequent disposal or regeneration. The proven nature of the carbon adsorption technology in treating the COCs ensures its effectiveness in meeting the remediation goals of the treatment process. The technology is readily implemented and presents minimal short-term risks. The excavation and off site disposal of contaminated soils provides for the permanent elimination of the potential for direct contact with constituents in these media as well as the removal of these materials from acting as a potential source of ground water contamination.

Preference for Treatment as a Principal Element

The preferred alternative addresses the principal threat, which is associated with the presence of contaminants in the perched ground water at levels which present unacceptable risks to human health, through treatment of the ground water. Extraction of perched ground water followed by carbon adsorption will provide treatment of the ground water contamination and will lessen the potential for the movement of dissolved constituents from the perched water table into the true water table. The preferred alternative also addresses the presence of PCBs and TPH in soils through off site disposal of soils which do not meet New Jersey non-residential soil cleanup criteria (TBCs).

XII. DOCUMENTATION OF NO SIGNIFICANT CHANGES

The Proposed Plan for Areas 29 and K was released for public comment on April 11, 1996. The Proposed Plan identified Alternative 4, Ground Water Extraction and Carbon Adsorption, and Excavation and Off Site Disposal of Soils Contaminated with PCBs and/or TPH as the preferred remedy. FAA received no written and verbal comments on the Proposed Plan, either during the public meeting or the subsequent 30-day comment period. Consequently, it has been determined that no significant changes to the remedy, as originally identified in the Proposed Plan, are necessary.

RESPONSIVENESS SUMMARY
RECORD OF DECISION
Area 29 - Fire Training Area and
Area K - Storage Area Near Area 29
FAA Technical Center

The purpose of this Responsiveness Summary is to review public response to the Proposed Plan for Areas 29 and K. It also documents the FAA's consideration of such comments during the decision-making process and provides answers to any major comments raised during the public comment period.

The Responsiveness Summary is divided into the following sections:

- Overview - This section briefly describes the selected remedy and any changes to the remedy from that included in the Proposed Plan for Areas 29 and K.

- Background on Community Development - This section provides a summary of community interest in Areas 29 and K and identifies key public issues. It also describes community relations activities conducted with respect to these areas of concern.

- Summary of Major Questions and Comments - This section summarizes verbal and written comments received during the public meeting and public comment period.

I. OVERVIEW

The FAA Technical Center is located at the Atlantic City International Airport in Atlantic County, New Jersey. Area 29 is located northeast of Atlantic City International Airport runways and southwest of White Horse Pike and was constructed in the early 1970s for the training of airport fire fighting personnel. Area K is located northwest of the test burn areas at Area 29 and was formerly used to store drums and tanks. This Responsiveness Summary addresses public response to the Proposed Plan for Areas 29 and K only.

The Proposed Plan and other supporting information for Areas 29 and K are available for public review at the Atlantic County Library, 2 South Farragut Avenue, Mays Landing, New Jersey.

II. BACKGROUND ON COMMUNITY INVOLVEMENT

This section provides a brief history of community participation in the EI/FS activities conducted at Areas 29 and K.

Throughout the investigation period, the EPA, NJDEP, Atlantic County Department of Health and the Pinelands Commission have been directly involved through proposal and project review and comments. Periodic meetings have been held to maintain open lines of communication and to keep all parties abreast of current activities.

On April 11, 1996, a newspaper notification was published in the Atlantic City Press inviting the public to comment on the EI/FS process and Proposed Plan. The announcement also identified the time and location of a public meeting to be held to discuss the proposed remedial action, the location of the information repository, the length of the public comment period, and the address to which written comments could be sent. Public comments were accepted from April 11 through May 10, 1996.

A public meeting was held on May 2, 1996 at the Atlantic County Library in Mays Landing, New Jersey. The Areas 29 and K EI/FS results were discussed. FAA representatives included: Keith C. Buch, Program Manager, Howard Kimpton, Supervisor, Environmental Section and Gary Poulsen, Manager, Facility Engineering and Operations Division. Betsy Donovan, Remedial Project Manager, Federal Facilities Section represented the USEPA Emergency and Remedial Response Division; and Ian Curtis, Case Manager, represented the NJDEP Bureau of Federal Case Management. Sean Clancy represented the Atlantic County Health Department. TRC Environmental Corporation, FAA's environmental contractor, also attended. The complete attendance list is provided as Appendix B to this ROD. A transcript of the public meeting is provided as Appendix C.

III. SUMMARY OF MAJOR QUESTIONS AND COMMENTS

No questions or comments with regard to the Proposed Plan for Areas 29 and K were raised at the public meeting held on May 2, 1996. In addition, no written comments were received during the thirty-day public comment period following the public meeting.

APPENDIX A

NJDEP AND PINELANDS COMMISSION LETTERS OF CONCURRENCE

State of New Jersey
Department of Environmental Protection

Christine Todd Whitman
Governor

Robert C. ...ian, Jr.
Commissioner

JUL 26 1995

Mr. Keith Buch
FAA Technical Center
Environmental Programs Branch
ACM-440
Atlantic City International Airport, N.J. 08405

Dear Mr. Buch,

Re: Area 29 and K Proposed Plan
FAA Technical Center
Egg Harbor Township, Atlantic County

The New Jersey Department of Environmental Protection (NJDEP) has reviewed the Draft Final Proposed Plan for Areas 29 and K of the Federal Aviation Administration (FAA) Superfund Site located in Egg Harbor Township, Atlantic County.

Area 29 was developed in the 1970's for the training of airport fire fighting personnel. The site was designed with runoff storage and fuel storage tanks which were removed and disposed of off-site. Full-scale aircraft test burns were conducted on a large burn area, while smaller fuel fires were extinguished on a concrete pad. Area K is immediately adjacent to Area 29, and has been included in the Area 29 remedial investigation, risk assessment and feasibility study.

Contaminants of concern are petroleum hydrocarbons, PCBs, volatile organic compounds, and aromatic hydrocarbons. The remedial objectives, as stated in the draft Proposed Plan are to reduce surface and subsurface contaminants to prevent exposure and migration hazards, to eliminate PCB contaminated surface soils, and to eliminate/prevent migration of contaminants in the perched ground water. In order to meet these objectives, the agencies involved have determined that a remedial action incorporating ground water extraction and carbon adsorption, combined with excavation and off-site disposal of PCB and Petroleum Hydrocarbon contaminated soils would be the best alternative (alternative 4) for these Areas.

The previously submitted Proposed Plan for Areas 29 and K had been reviewed and approved by the NJDEP prior to this latest revision. This copy/revision of the Proposed Plan has undergone minor changes in order clarify certain statements to make the Proposed Plan more consistent with other decision documents at the FAA Technical Center and other USEPA decision documents.

The Proposed Plan is approved subject to approval of the Pinelands Commission, and addressing the comments below.

- Page 6; In regard to the PCBs in the soil. The current soil cleanup criteria of PCBs is 0.49 for residential use, and 2 ppm for non-residential (industrial) use. These criteria are applicable through the entire soil column (please see attachment). Further, the Impact To Ground Water criteria - stated as 100 ppm - is incorrectly used and has been modified to 50 ppm to be consistent with TSCA requirements. Impact to ground water criteria is a "screening" criteria which should be used to determine if ground water investigation is necessary. In the event that FAA chooses to cleanup the soils to the non-residential cleanup criteria, a Declaration of Environmental Restriction (DER - deed restriction) will be necessary.

- A major remedial objective for the remediation of Areas 29 and K is the reduction in the human health risks and Hazard Index. The NJ required risk criteria is 10^{-6} and hazard index is 1. Please state this a remedial action objective.

The NJDEP has determined that Alternative 4 and the Proposed Plan is consistent with State regulations and policies. Based on discussions with Kathy Swigon of the Pinelands Commission, the Pinelands Commission will be commenting on this Proposed Plan separately from the NJDEP. Pinelands Commission approval must be obtained prior to implementation of the Proposed Plan.

If you should have any questions or require additional information, please do not hesitate to contact me at (609) 633-1455.

Sincerely,

Bruce Venner

Bruce Venner, Chief
Bureau of Federal Case Management

cc. Kathy Swigon, Pinelands Commission
Betsy Donovan, USEPA - Region II
George Nicholas, BGWPA
Steve Byrnes, BEERA

State of New Jersey
THE PINELANDS COMMISSION
PO Box 7
NEW LISBON NJ 08064
(609) 894-9342

CHRISTINE TODD WHITMAN
Governor

April 25, 1996

Ian Curtis
NJDEP, Bureau of Federal Case Management
CN 028
401 East State Street
Trenton, NJ 08625-0028

Please Always Refer To
This Application Number

RE: App. No. 87-0046.12
Areas 29 & K
FAA Technical Center
Egg Harbor Township

Dear Mr. Curtis:

The Commission staff has received and reviewed the April, 1996 Superfund Proposed Plan regarding the remediation of soils and groundwater for Area2 29 & K at the FAA Technical Center.

The Plan will be consistent with the minimum standards of the Pinelands Comprehensive Management Plan provided that the groundwater extraction, treatment and reinjection system is designed to comply with the non-degradation water quality standards and other applicable standards. Please refer to our March 13, 1996 letter (enclosed) regarding Commission concerns and application requirements for the proposed remedial design.

If you have any questions, please contact our development review staff.

Sincerely,

William F. Harrison, Esq.
Assistant Director

Encl(1): March 13, 1996 letter

cc: Keith Buch
Jean Oliva (with enclosure)

State of New Jersey
THE PINELANDS COMMISSION
PO Box 7
NEW LISBON NJ 08064
(609) 894-9342

CHRISTINE TODD WHITMAN
Governor

March 13, 1996

Ian Curtis
NJDEP Bureau of Federal Case Management
CN 028
401 East State Street
Trenton, NJ 08625-028

Please Always Refer To
This Application Number

RE: App. No. 87-0046.12
FAA Technical Center
Areas 29 & K
Egg Harbor Township

Dear Mr. Curtis:

The Commission staff has received and reviewed the Revised Draft Final Proposed Plan and the Record of Decision (ROD) regarding the remediation of soils and groundwater for Areas 29 & K at the FAA Technical Center. The revised Plan proposes the institution of a Declaration of Environmental Restriction (DER) for soils.

The proposed remedial alternative described in the draft ROD will be consistent with the water quality standards of the Pinelands Comprehensive Management Plan (CMP) provided that the groundwater extraction, treatment and re-injection system is designed so that:

1. Prior to re-injection, the concentrations of the contaminants of concern in the treated groundwater are reduced to a levels that do not exceed the Practical Quantitation Levels as defined in N.J.A.C. 7:9-6.4, or

2. The design and location of the components of the extraction, treatment and re-injection system ensure that, as monitored in groundwater monitoring wells installed on the site, the concentration of contaminants in the treated groundwater at the site are reduced to levels do not exceed the PQL for each contaminant of concern.

In addition to meeting the water quality standards of the CMP, the proposed remedial action must comply with all applicable requirements of the CMP, including the standards relating to wetlands protection and protection of threatened and endangered species. Prior to implementation of the remedial alternative, it will be necessary for the Pinelands Commission to determine that the remedial design plans are consistent with the CMP. In order for the Commission to make such a determination, the following information must be provided:

1. Fill out, sign, have notarized and return the Pinelands Comprehensive Management Plan's Application (enclosed).

2. A dated plan showing the location of all existing and proposed development including all existing and proposed equipment, facilities, the treatment system extraction and injection wells, monitoring wells, pipelines, buildings, structures, parking areas, roads, limits of disturbance and clearing and driveways.

3. The limits of any wetlands located within 300 feet of the project must be indicated on a plan.

4. Modeling of the expected impacts of the system on the perched groundwater and an analysis of the expected efficiency of the treatment unit in reducing the concentration of each contaminant of concern.

Table 5 of the submitted ROD contains a list of ARAR's for the site. The table should include the requirements of the Pinelands Comprehensive Management Plan (N.J.A.C. 7:50-1.1 et seq.) in this list. The standards of the CMP are ARAR's.

If you have any questions, please contact our development review staff.

Sincerely,

William F. Harrison

William F. Harrison, Esq.
Assistant Director

TD

Encl(1): Application Form

cc: Keith Buch
Jean Oliva

APPENDIX B

PUBLIC MEETING ATTENDANCE LIST

SIGN-IN SHEET
PUBLIC MEETING
MAY 2, 1996

PROPOSED REMEDIAL ACTION AT
AREAS 29, K, & B
FAA TECHNICAL CENTER
ATLANTIC CITY INTERNATIONAL AIRPORT, NEW JERSEY

	NAME	ADDRESS	PHONE NUMBER
1.	Howard Kimpton	FAA Technical Center	609-485-5998
2.	Gary Poulsen	FAA Technical Center	609 4856789
3.	GEORGE NICHOLAS	NJDEP	609-292-8427
4.	BETSY DONOVAN	EPA	212-637-4303
5.	Steve Byrnes	NJDEP	609-984-3068
6.	Ian Curtis	NJDEP	609 633 7232
7.	Stacy Clay	ATL. Co	609 645 5971
8.			
9.			
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11.			
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APPENDIX C

PUBLIC MEETING TRANSCRIPT

PUBLIC MEETING
To Discuss the Proposed Remedial Action at
Area 29 - Fire Training Area
Area K - Storage Area Near Area 29
Area B - Former Navy Fire Test Facility

FAA Technical Center
Atlantic City International Airport, NJ

Thursday, May 2, 1996
2:00 p.m.
Atlantic County Library
2 South Farragut Avenue
Mays Landing, NJ 08330

APPEARANCES

For the FAA Technical Center: KEITH C. BUCH, Program Manager
FAA Technical Center

For TRC Environmental Corp.: LARRY BUTLIEN, Project Hydrogeologist, TRC Environmental Corporation

JEAN M. OLIVA, P.E., Project Engineer, TRC Environmental Corporation

GCI TRANSCRIPTION AND RECORDING SERVICES
505 HAMILTON AVENUE, Suite 107
LINWOOD, NEW JERSEY 08221
(609) 927-0299 FAX (609) 927-6420
1-800-471-0299

INDEX

Tape #CP-4-96, Index #0025 at 2:00 p.m.)

MR. BUCH: Hello. My name is Keith Buch. I'm the FAA Superfund Program Manager, and welcome to today's public hearing for Area 29 and Area B. The public hearing was duly advertised in the Press of Atlantic City as required by the Superfund regulations. We expect that after today's public hearing to have a finalized rod within -- how many days, Jean?

MS. OLIVA: About ninety to a hundred and twenty.

MR. BUCH: Okay. And at that point we'll proceed with the final designs for the cleanup of both Area 29 and both Area B. I'd like at this point to turn the meeting over to our technical experts from TRC who have been here at the FAA Tech Center since 1986 performing all the necessary remedial investigations and feasibility studies and designs that are required to effectuate a proper Superfund Cleanup. I'd like to introduce Jean Oliva from TRC and Larry Butlien from there. I'll let Larry explain the hydrogeological background of the Area 29 and K Superfund Cleanup. Larry, would you please.

MR. BUTLIEN: Certainly. As Keith mentioned, my name is Larry Butlien and I'm the Project Hydrogeologist from TRC for the FAA project. I'd first like to very briefly present a history of how the Tech Center became involved in environmental investigation.

In 1980 and 1981 contamination was found at the Price's Pit Landfill. This contamination also affected the Atlantic City well field which was located adjacent to Price's Pit. Price's Pit is a Superfund site which is located about three to four miles east-southeast of the Technical Center. In 1981 the New Jersey Department of Environmental Protection (NJDEP) and the Atlantic City Municipal Utility Authority (ACMUA) hired Roy F. Weston to conduct a study to relocate the well field. As a result of this study the Technical Center was selected as the best location for the new Atlantic City well field. Between 1983 and 1984, Weston, through the New Jersey DEP, identified five areas within the Technical Center boundaries which might present a potential pollution impact to the new well field. Weston confirmed the presence of the pollutants and the New Jersey DEP issued a consent order to the Technical Center to perform the remedial investigation/feasibility study. In 1986 the FAA contracted with TRC Environmental Corporation to perform a remedial investigation/feasibility study of the Technical Center grounds. As part of the contract a complete background investigation of the Technical Center was required. A total of twenty-five areas of concern have been identified by the FAA and the U.S. Environmental Protection Agency (USEPA) that require evaluation.

All the work that TRC has performed has been in

accordance with all applicable federal and state environmental laws, statutes and regulations. The FAA has worked closely with USEPA, the New Jersey DEP, Atlantic County Health Department, and the Pinelands Commission. Each step of the investigative process has been reviewed and approved by these organizations and no work has been conducted until all necessary approvals were received.

(SLIDE PRESENTATION)

The meeting this afternoon will focus on the proposed plan for three areas: Area 29, the Fire Training Area; Area K, the Storage Area near Area 29; and Area B, the Navy Fire Test Facility. Each area will be discussed separately; Areas 29 and K will be discussed initially followed by Area B. I will discuss the background information and the results of the remedial investigation for each area, while Jean Oliva will discuss the risk evaluations conducted for each area and then will summarize the remedial alternatives for each area.

Area 29 is located northeast of the Atlantic City International Airport runways, with Area K located adjacent to Area 29. This slide also shows the locations of Area B and other areas of concern at the Technical Center.

Area 25 -- excuse me. Area 29 is referred to as the Fire Training Area. This area was constructed in the early 1970's and was used to train airport fire fighting

personnel. The area contains a 150 foot-diameter burn pad and a smaller concrete burn pad where test burns were conducted. The area also contained two underground storage tanks for the collection of run-off from the burn pads and two above ground tanks located on a small hill. The two underground tanks were emptied, removed, and disposed of off-site in an environmentally acceptable manner in December of 1988. Area K, referred to as the Storage Area near Area 29, is located across the dirt road from the burn areas at Area 29. This area was used for the storage of drums and tanks and it was reported that the drums were removed off-site in an environmentally acceptable manner from the area by the Fall of 1986.

This next slide shows the general layout of Areas 29 and K. Area 29's boundaries are generally outlined by the triangular shaped dirt roads in the area. As you can see, at the center of Area 29 is the circular burn pad with the smaller concrete burn pad located to the north. The two former underground storage tanks that collected the burn pad run-off were located to the east of the small burn pad. The two above ground -- the two above ground tanks located on the small hill is in the western portion of the site. Area K is located northwest of Area 29 on the northwest side of the northeast-southwest trending dirt road.

This is a photo -- this is a photograph taken

recently from the small hill looking northeast along the dirt road. The small concrete burn pad is in the center of the photograph and Area K is located on the far left-hand side of the photo.

This is a photograph taken recently from the small hill looking east toward the large circular burn pad, and note the current conditions showing standing water in the middle of the burn pad.

This is an older photograph taken in 1988 that shows the small concrete burn pad.

This photo was also taken in 1988 showing one of the underground storage tanks used for the collection of the burn pad run-off. This particular tank collected the burn pad (sic) from the large circular burn pad and had a ten thousand gallon capacity. As you can see, this tank was open-ended on the top.

This is a photograph taken in December of 1988 immediately after the ten thousand gallon tank was removed from the ground.

This final photograph shows the above ground tanks located on the small hill. The photo was taken on the west side of the hill looking toward the east.

The goal of the environmental investigations at Areas 29 and K was to determine if past site activities resulted in contamination of the site's soils and/or ground

water. The initial investigation was conducted by Roy F. Weston in 1983 as part of the Atlantic City well field relocation study. During this initial investigation, Weston installed and sampled three ground water monitoring wells of which one exhibited significant levels of organic compounds.

TRC's Phase I investigation at Areas 29 and K during 1987 included preliminary investigations including a soil gas and a geophysical investigation. In addition, a total of sixteen surface soil samples were collected, four soil borings were drilled, two monitoring wells were installed, and a total of five ground water samples collected. Phase I analytical results indicated significant levels of organic compounds in the soils and perched ground water at the site. Specifically, polychlorinated biphenyls (PCBs) and total petroleum hydrocarbons (TPH) were identified in the soils while volatile organic compounds (VOCs) were detected in the perched water table aquifer.

This next slide shows the locations of all the Phase I sampling locations including the surface soil samples, soil borings and monitoring well locations.

During 1988 TRC conducted a Phase II investigation of Areas 29 and K. The purpose of this investigation was to further define the lateral extent of PCB contamination in the surface soils and to determine if contamination existed beneath the two underground storage tanks. These goals were

accomplished by collecting a total of seven surface soil samples and eight subsurface soil samples at the base of the tank excavations. As mentioned earlier, the two underground tanks were removed during the Phase II investigation. The Phase II results further defined the lateral extent of PCB contamination in the surface soils while elevated levels of TPH were detected in the soils beneath the ten thousand gallon storage tank.

This next slide shows the locations of the Phase II surface soil samples. Four subsurface soil samples were collected from the base of each of the two underground tanks.

Additional ground water monitoring at Area 29 was conducted in December of 1991 and a program of quarterly ground water monitoring was implemented at the site starting in May 1993 and is still ongoing today. The purpose of the additional ground water monitoring was to determine if perched ground water contamination has migrated into the underlying true water table aquifer.

The results of the various investigations at Areas 29 and K have identified a zone of perched ground water across the site. In addition, soil and ground water contamination has been identified at levels greater than current soil cleanup criteria and ground water quality standards. Specifically, PCB contamination has been detected in the site's surface and subsurface soils. TPH

contamination was also identified in the subsurface soils. And finally, VOC contamination has been identified in the perched ground water aquifer above ground water quality standards. Results from the quarterly ground water sampling program have not identified contaminated ground water within the true water table aquifer at levels above ground water quality standards.

This slide shows locations of soil contamina -- where soil contamination exceeds the current soil cleanup criteria. Specifically, the areas include surface soils contaminated with PCBs in the immediate vicinity of Area K, the area surrounding the small concrete burn pad, and within the large circular burn pad. The maximum PCB level detected in the surface soils was thirty parts per million (ppm). The NJDEP soil cleanup criteria for PCBs is two parts per million. The other area of soil contamination is at the location of the former ten thousand gallon underground storage tank. At this location the maximum level of TPH contamination was fourteen thousand ppm. The NJDEP soil cleanup criteria for total organics is ten thousand ppm.

As mentioned earlier, during the environmental investigations at Area 29, a zone of perched ground water was identified across the site. This perched zone was identified as underlying a significant portion of Area 29 including the circular and concrete burn pads. This slide represents a

schematic geologic cross-section of Area 29 showing the relationship between the perched and true water table aquifers. As you can see, the perched water table is situated above the true water table and is relatively limited in lateral and vertical extent. The perched ground water is formed where the soil in the unsaturated zone is locally saturated because it overlies a low-permeability silty clay or clayey silt zone situated above the true water table. During the investigation the clay unit was identified as being variable in thickness ranging between two and sixteen feet thick with the surface of the clay unit found at a depth of ten to fourteen feet below the ground surface. While ground water flow in the regional true water table aquifer was determined to be toward the east-southeast, the flow of perched ground water was estimated to be much more variable due to localized changes in the slope of the surface of the clay unit.

This slide represents an approximation of the aerial extent of ground water contamination in the perched zone where ground water quality standards have been exceeded. Ground water results from monitoring well 29-MW2S have consistently exhibited VOCs above ground water quality standards, while exceedances of ground water qualities standards have been more sporadic and periodic in monitoring well 29-MW3S.

This slide represents a contour map and ground water flow direction of the true water table aquifer. As stated earlier, the ground water flow direction in the true water table aquifer is toward the east-southeast direction as represented by contouring the water level elevations in the wells screened in the true water table aquifer.

I would now like to turn the presentation over to Jean Oliva of TRC. She will summarize the risk evaluation and the remedial action objectives associated with Areas 29 and Area K.

MS. OLIVA: Thank you, Larry. As Larry mentioned, my name is Jean Oliva and I'm a project engineer with TRC Environmental Corporation and I have been involved in feasibility study activities at the FAA Technical Center since 1989.

(SLIDE PRESENTATION CONTINUED)

Based on the results of the site investigations, a human health risk assessment was conducted to evaluate potential risks associated with exposures to soil and ground water. Ground water ingestion was evaluated even though there is no drinking water well currently located at Areas 29 or K. The risk estimated for ground water ingestion was above acceptable limits indicating that a remedial response is appropriate. A qualitative assessment of ecological risks also identified a potential risk to wildlife.

Based on the results of the risk assessment and the site investigation, objectives were developed for a remedial response as listed here. In general these objectives include preventing exposures to contaminants in soil and ground water and minimizing the potential migration of these contaminants. Based on these objectives, a feasibility study was conducted.

This slide highlights the elements of a feasibility study. Initially, remedial technologies are identified and screened to determine which technologies are most appropriate for use at the site. The selected technologies are then used to develop remedial alternatives which are evaluated based on nine criteria defined in the federal regulations.

The alternatives that were developed for Areas 29 and K include a no-action alternative which must be considered based on federal regulations. The second alternative involves the placement of a cap over contaminated soils which would address potential exposures to the soils but would not address ground water contamination. The next two alternatives involve ground water extraction and treatment in combination with soil excavation and off-site disposal. The first of the two alternatives involves air stripping in which ground water contaminants are transferred to the vapor phase. The second of the two alternatives involves

carbon adsorption in which the ground water contaminants are transferred to a carbon filter media. The last two remedial alternatives employ in situ, or in-place, remedial actions which do not involve ground water extraction. They would also be combined with soil excavation and off-site disposal. The first of the two in situ remedial alternatives uses processes similar to air stripping but applies them below ground to remove contaminants from the ground water. The second alternative uses microbes to break down the ground water contamination.

Each of the remedial alternatives underwent a detailed evaluation based on the nine criteria listed here. The alternatives and their evaluations are described in more detail in the proposed plan. Compliance with the last criterion community acceptance will be determined based on public comments which I'll discuss in more detail later in this presentation.

Based on the detailed analysis of the remedial alternatives, a preferred remedy was selected for Areas 29 and K. The preferred remedy consists of ground water extraction and treatment using carbon adsorption in combination with soil excavation and off-site disposal as well as the establishment of a Declaration of Environmental Restrictions

to ensure that future residential site development does not occur. This alternative offers the greatest overall protection of human health in the environment through its off-site disposal of contaminated soils and its ability to treat the ground water contaminants. It is also cost-effective and meets regulatory requirements.

I will now turn the presentation back to Larry Butlien of TRC who will describe the investigations that were conducted at Area B, the Navy Fire Test Facility. Larry.

MR. BUTLIEN: Thanks, Jean.

(SLIDE PRESENTATION CONTINUED)

First I want to just talk briefly about the background information and the results of the remedial investigation at Area B.

Area B is located in the southwestern portion of the FAA Technical Center property. The South Branch of Doughty's Mill Stream is located along the southern portion of the area. Area B is located approximately forty-five hundred feet upstream of the Upper Atlantic City Reservoir. This slide also shows the locations of Area 29 and K, and other areas of concern relative to Area B.

Area B is referred to as the Navy Fire Test Facility. The area was used during the late 1950's and early 1960's for aircraft fire training. A review of historical

aerial photographs indicates that the highest level of activity occurred between 1957 and 1962. During this time frame aircraft and sections of aircraft were located throughout the area and portions of the area's ground exhibited dark-colored stains. By 1965 the area had been grassed over. A portion of the area was later used for GSA motor pool parking. Today a majority of Area B is grass-covered with a heavily wooded area in the souther portion of the site along the stream.

This next slide shows the general layout of Area B. Shown are the approximate limits of the Navy Fire Test Area and then the smaller area showing the GSA Motor Pool parking location. Also note the South Branch of Doughty's Mill Stream along the southern portion of the area and that the -- and also the location of the former wastewater treatment plant which was closed and demolished in 1992.

This photo was taken in 1988. It shows the southern portion of the site. I'm sorry. This photo was taken in 1987 from the northern portion of Area B looking southwest toward the wastewater treatment facility. Note the dirt road which essentially separates Area B into the northern and southern halves, and also note that the area is generally an open grassy field.

This next photo was taken in 1988 and shows the southern portion of the site. The South Branch of Doughty's

Mill Stream is located immediately behind the front edge of the wooded area. Also note one of the site's monitoring wells which is located adjacent to the stream.

The goal of the environmental investigations at Area B was to determine if past site activities resulted in contamination of the site's soils and ground water. TRC has conducted a number of environmental investigations that are at Area B dating back to 1987. TRC's Phase I investigation at Area B included preliminary investigations such as soil gas surveys and a geophysical investigations. In addition, a total of five surface soil samples, four soil borings, and four subsurface soil samples were collected. In addition, one stream sediment and surface water sample was collected from the South Branch and three monitoring wells were installed at the site.

The next slide shows locations of all the Phase I sampling locations including surface soil samples, soil borings and the one sediment/surface water sampling.

During 1988, TRC conducted a Phase II investigation of Area B. The purpose of this investigation was to further define the lateral extent and chemical nature of a floating product layer which had been identified in monitoring well B-MW3S following the Phase I investigation. These goals were accomplished by drilling a total of twelve soil borings within seventy-five feet of the well. Organic vapor

headspace readings were measured in the soil samples collected from each soil boring. Elevated readings were plotted to determine the lateral extent of the subsurface contamination associated with the floating product. In addition, a sample of the floating product was collected and was determined to be similar to gasoline. Finally, a sample of ground water beneath the floating product was collected and analyzed and it determined to exhibit elevated levels of VOCs.

This next slide shows the locations of the Phase II soil borings drilled in the vicinity of well MW3S. It also shows the approximate extent of the floating product based on the elevated headspace readings. Also note the direction of shallow ground water flow toward the southeast, which is toward the South Branch.

During 1989 TRC conducted a supplemental investigation. The purpose of this investigation was to further define the subsurface soil quality in the area of the floating product. This was accomplished by drilling two soil borings and collecting three subsurface soil samples for chemical analysis. The results of the soil testing did not indicate any exceedance of federal or state soil standards.

This next slide shows the locations of the supplemental investigation soil borings drilled adjacent to well MW3S.

A number of additional investigations were conducted at Area B to determine the source of the contamination and to further delineate the nature and extent of ground water contamination at the site. During August of 1992 a HydroPunch study was conducted and focused on areas of stained soils and aircraft staging areas that were visible in the historical aerial photographs. A total of ten HydroPunch locations were sampled in which shallow ground water was collected. The results of this study did not identify a source of the floating product.

The next investigation occurred in January of 1993 and included the installation of two additional monitoring wells, downgrading of well MW3S to further define the nature and extent of dissolved ground water contamination. These wells were sampled during February and May of 1993 and determined to contain several chlorinated VOCs at levels above federal and state ground water quality standards.

During July of 1993 a Geoprobe investigation was conducted to further define the extent of the floating product as well as the nature and extent of dissolved ground water contamination up gradient and down gradient of well MW3S. A total of twenty-six Geoprobe ground water samples were collected during this investigation. The results of the Geoprobe samples resulted in the installation of four additional monitoring wells, one located up gradient, one side

gradient, and two down gradient of well 3S. In addition, one subsurface soil sample was collected and analyzed from each of the new monitoring well soil borings. The results of this investigation further defined the extent of the floating product and the nature and extent of the dissolved ground water contamination plume.

Lastly, a program of quarterly ground water and surface water monitoring was implemented at Area B starting in February of 1993 and is still ongoing. The purpose of the monitoring was to determine trends in the dissolved ground water contamination, evaluate the South Branch surface water quality adjacent to the site, and to measure the product thickness in well MW3S.

(POSTER BOARD)

I would like to now direct your attention to the poster board -- I'll move it a little closer. This poster board basically shows the colored areas which represent the historical ground scars and stained soils that were indicated from the aerial -- the historical aerial photographs. Shown on this poster are all the environmental investigations that have been conducted during the Phase I and Phase II supplemental in the HydroPunch investigation. The HydroPunch investigation focused on areas within or down gradient of the stained soil area as represented by these black symbols here, and this generally just gives you kind of

a general overview of the historical site use with -- like I said, of the ground stains and scars, and also shows airplane fuselage locations relative to the various investigation sampling locations.

(SLIDE PRESENTATION CONTINUED)

This next slide shows the locations of the twenty-six Geoprobe ground water samples and the four new monitoring wells associated with the investigation. Also shown is the updated approximation of the lateral extent of the floating product plume in the vicinity of MW3S.

This next slide identifies the locations of the three wells and the three surface water sampling stations sampled during the ongoing quarterly ground water sampling areas.

The results of the various investigations at Area B have identified a zone of contaminated ground water at levels exceeding federal and state ground water quality standards. In addition, a plume of floating product has been identified in the southern portion of the site. The floating product has been identified as being similar to gasoline and as measured in MW3S has ranged in thickness between zero and eight inches. The aerial dimensions of the product plume are approximately sixty feet long by twenty-five feet wide. The major dissolved ground water contaminants exceeding the ground water quality standards include aromatic and

chlorinated VOCs. However, no specific contaminant source area or areas have been identified during the various investigations at Area B.

This shows the aerial extent of ground water contamination where the ground water quality standards have been exceeded. As you can see, this area is in the southern portion of the site immediately north of the stream.

I would now like to turn the presentation back over to Jean who will summarize the risks associated with the contamination found at Area B, and also summarize the remedial action objectives associated with the site.

MS. OLIVA: Based on the results of the site investigations at Area B, a human health risk assessment was conducted to evaluate potential risks associated with exposures to the soil and ground water. Again, ground water ingestion was evaluated even though a drinking water well does not exist at Area B. The risk estimated for ground water ingestion was above acceptable limits, indicating a remedial response is appropriate. A quantitative assessment of ecological risks also identified a potential risk to wildlife.

Remedial objectives were developed for a remedial response as listed here. The objectives include preventing exposures to both the floating product and the ground water contamination and minimizing the potential migration of these

contaminants. Based on these objectives a feasibility study was conducted.

The Area B Feasibility Study used the same technology evaluation and alternative development process which was used for the Areas 29 and K Feasibility Study.

The remedial actions developed for Area B include the no action alternative; there are three alternatives in which floating product and ground water -- and ground water would both be extracted with the product treated off-site and the ground water treated on-site using various technologies. As I mentioned for Areas 29 and K, the air stripping alternative, which is the first of these three alternatives, utilizes a technology which transfers ground water contaminants to the vapor phase. The second of the three alternatives uses ultraviolet, or UV, oxidation where contaminants are destroyed by exposing them to ultraviolet light in the presence of oxidizers. The last of the three alternatives includes cross-flow pervaporation, a technology which uses a selective membrane that allows certain organic compounds to pass through the membrane and be separated from the water phase. The last remedial alternative involves in situ treatment in which the floating

product and ground water would be treated without being extracted from the ground. The air sparging/vapor extraction technology uses processes similar to air stripping but applies them below ground to remove the contaminants.

Each of the remedial alternatives underwent a detailed evaluation based on the nine Superfund criteria and, again, public comments will provide the basis for determining compliance with the last criterion community acceptance.

Based on the detailed analysis of the remedial alternatives, no action is the preferred remedy for Area B soils. For ground water at Area B, a preferred remedy and a contingency remedy were selected. The preferred ground water remedy consists of in situ treatment to the ground water using air sparging and vapor extraction.

I wanted to describe the air sparging treatment system. In air sparging treatment, air is injected beneath the water table using an air sparging well. As the air bubbles move upward to the soil, ground water and any floating product which may be present, they strip away the volatile contaminants. The air with the contaminants is then extracted using a vapor extraction well and, if necessary, is treated before being released. Additional testing needs to be conducted at Area B to ensure that the subsurface

conditions are appropriate for the use of this technology.

In the event that this preferred alternative is not appropriate for use at Area B, then the contingency remedy will be employed. And the contingency remedy consists of floating products and ground water extraction with off-site incineration of the floating product and air stripping of the contaminated ground water.

In an air stripping system the extracted ground water is allowed to flow down over packing material to a stripping tower as air is blown countercurrent to the direction of the water flow. As the air passes over the water it strips away the volatile contaminants and they're released through the top of the air stripper.

Both the preferred ground water remedy and the contingency remedy are protective of human health in the environment because they both treat the floating product and the ground water contaminants. Since the contingency remedy utilizes the same basic treatment processes as the cross-flow -- I'm sorry -- as the air sparging vapor extraction, they offer -- both alternatives offer a similar degree of effectiveness.

And this last slide shows the process that will be used to determine the final remedial actions at Areas 29 and K, and Area B. Through this meeting as well as an ongoing thirty-day public comment period, the FAA is soliciting

public comments on the Proposed Plans. We're right in this area here. Written comments will be accepted through May 10th and verbal comments will be accepted here this afternoon following these presentations. Based on the Proposed Plan and the public comments, a Records of Decision will be prepared for each, Areas 29, K and Area B. The Records of Decision will include Responsiveness Summaries which will address all public comments which will be received during the public comment period. Upon finalization of the Records of Decision, a notice will be printed in the Press and a copy of the Records of Decision will be placed in the Administrative Record which is maintained in the reference section here at the Library.

I will now turn the presentation back to Keith Buch of the FAA Technical Center. Keith.

MR. BUCH: Well, thank you, Jean and Larry. I'd just like to state for the record that all practices that led to the contamination of ground water and soil that we have previously viewed have been eliminated at the FAA Technical Center, and that the FAA is currently in compliance with all federal, state, and local regulations respecting the handling, storage and disposal of hazardous waste and materials.

At this point we will end the formal presentation and will open the floor up to interested members of the public that may have questions regarding what they've seen

for the past forty minutes. If you do have a question, please state your name, affiliation, and address for the record. Seeing that there's no members from the public in the audience and there are no questions, I will now close this public meeting. Thank you for coming and please come to our next meeting.

(Ended at Index #1329 at 2:45 P.M.)

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C E R T I F I C A T I O N

I, CAROL PLATT, agent for GCI TRANSCRIPTION AND RECORDING SERVICES, a Notary Public and State- and Federally-Approved Sound Recording operator and transcriber, do hereby certify that the foregoing is a true and accurate transcript of the TRC Public Meeting taken by electronic sound recording at the time, place, and on the date hereinbefore set forth.

Carol Platt

CAROL PLATT
Notary Public of New Jersey
My Commission expires July, 1997

Dated: